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E R R A T A to the J O U R N A L of the S O C I E T Y.

With the issue of the Journal of the Society in 1950 and subsequently there has, owing to several errors, been considerable confusion over Volume and Serial numbering and pagination. In order to regularize the position you are requested to amend all Journals from 1950 to 1952 on the following lines :-

<u>Journal incorrectly published as :-</u>	<u>Correct numbering etc. of the Journal is :-</u>
1950 Vol.XX Nos. 6 & 7 (90) pagination 274 to 407	Vol. XX No.1 (90) pagination 1 to 134
1952 Vol.XX No.1 (91) pagination 408 to 463	Vol. XXI No.1 (91) pagination 1 to 56.
Dec.1952 Vol. XX No.2 (92) pagination 57 to 79	Vol. XXI No.2 (92) pagination 57 to 79

The correct sequence is therefore as follows :-

December, 1946	Vol.XIX	Nos. 3 & 4	(87 and 88)	
1947 - 1948	Vol. XIX	No.5	(89)	
1950	Vol. XX	No.1	(90)	as amended
1952	Vol.XXI	No.1	(91)	as amended
December, 1952	Vol.XXI	No.2	(92)	as amended
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Journal of the East Africa Natural History Society

1950

Vol. XX

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EDITOR'S NOTE

The Editor wishes to appeal to field-naturalists all over East Africa to send in their observations for publication in the *Journal* of the East African Natural History Society. What is especially wanted are notes on distribution, habits, behaviour, food, breeding, etc., of East African mammals, birds, reptiles, batrachians, fish and invertebrates, zoological or botanical monographs, based on field work, dealing with single species or with entire groups, faunal or floral surveys of certain areas, as well as notes on geological or meteorological phenomena. A special appeal goes to the members of the Game Departments of the three territories, to the Wardens of the Royal National Parks of Kenya, and to White Hunters and Sportsmen, all of whom are in a favourable position to add to our knowledge of African Wild Life. Their field observations would supplement admirably the valuable papers of a more systematic nature, which, it is hoped, will also come in, in steadily increasing numbers.

C.A.W. GUGGISBERG

JUN 26 1951

A Checklist of the Land Mammals

OF THE

Tanganyika Territory

AND THE

Zanzibar Protectorate

By

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* Animals which have been introduced under domestication, and man, are not included in these figures. Numbers in parentheses indicate the number of forms recorded by Matschie (1895).

1. FOREWORD

This checklist of the land mammals of Tanganyika Territory by Messrs. Swynnerton and Hayman will be welcomed by all who are interested in East African faunas, and will be especially valuable to zoologists.

Such a checklist, carefully compiled, has long been needed and it is to be hoped that comparable lists for Kenya and Uganda will be prepared in the not too distant future.

This checklist with its carefully compiled data showing the known distribution of each form is of particular interest because mammals of Africa play such an important role in so many branches of economic research today.

The value of the present paper has been greatly enhanced by the diligence and extreme care with which Mr. Swynnerton has checked all the available data, not only from published works but in many Museums.

So many of the diseases which affect both man and his domestic animals can be linked in one way or another with the indigenous mammalian faunas, that it is vital to research workers in fields other than mammalogy to have access to good records of the distribution of the many genera and species.

It is unfortunately only too true that the opening up of the country economically, by such means as the vast clearing for groundnuts and bush clearing and game reduction for Tsetse control, probably foreshadows the doom of many animals, except in special reserves and National Parks, while nature, too, is playing its part in this respect as witness to the virtual extinction of the Hippopotamus in the Rukwa basin during a recent drought.

Now that an up-to-date checklist of Tanganyika land mammals has been made available it is to be hoped that numerous observers will be stimulated to collect more data, not only on distribution, but still more on habits, local migrations and breeding rates, etc.

The East African Natural History Society is delighted to have been able to assist in publishing this most valuable paper and will be only too glad to offer its pages to persons who can extend the value of this paper by additional information.

L. S. B. LEAKEY,
Curator,
Coryndon Museum

2. INTRODUCTION

The publication in 1939 of G. M. Allen's comprehensive *Checklist of African Mammals* provided zoologists and others concerned with the mammalian fauna of the continent with an invaluable reference work. With its classified list of all the technical names applied from Linnaeus (1758) down to 1938, it has simplified very greatly the work of mammalogists and has proved an indispensable starting point for further investigations.

The present Checklist of the recorded mammals of Tanganyika Territory and the adjacent Zanzibar Protectorate is offered in the belief that further separate lists for each main division of the continent, expanded by the addition of recorded localities for each species, may help to draw attention, within each territory, to the rich mammalian fauna, and stimulate local interest with the object of filling in the numerous gaps in the published information on status, distribution, etc. It is also hoped that other workers in the biological field, such as agriculturists, medical entomologists, pest control workers, and so on, who not infrequently have occasion to refer to the local mammals in the course of their investigations, may find such a list of some value. A further point is that the modern developments now changing or threatening to change, so much of the surface of Africa, are bound to have a serious effect on the fauna and flora, and the mammalian population, in particular, is likely to suffer great changes in numbers and status. Conservation measures will be unlikely to have much effect except in those areas set aside as reserves or national parks, where, it is to be hoped, the hand of "progress" will not be welcomed. In all other areas the easy access by mechanical transport, the increase and shifting of native populations, the large-scale agricultural developments now in progress and not least, the long-term possibilities of opening up to domestic stock, through the scientific developments leading to the control of nagana, immense areas of virgin bush, are all factors that are likely to give a present-day list of the mammals and their distribution a historical value before many years have passed.

There has been only one previous attempt to list the Tanganyika mammals, and that was over fifty years ago. In 1895 Matschie published an account of the mammalian fauna as then known, with descriptions and notes on habits, which, though useful at the time, was necessarily sketchy in places owing to the inadequate exploration of the country at that time. Although it is true to say that there are still parts of Tanganyika unexplored zoologically, the progress made since 1895 is illustrated by a comparison of Matschie's total of some 166 forms with the 437 recorded in the present work. Although it does not seem likely that any striking discoveries remain to be made in the area under review, there is every reason to expect that closer investigation will add to the range of the known forms, will reveal further local races of established species, and will add to the Tanganyika list some forms found hitherto only over the border in the adjacent territories.

From the early travellers and naturalists, among whom Stuhlmann and Emin did pioneer work, down to the present day, there have been many who have added their quota of knowledge to the accumulating store of information on which local faunas, and eventually general natural histories, are based. Of living persons, none has contributed more to our knowledge than Arthur Loveridge whose many collecting expeditions during the past thirty-five years have filled in numerous gaps.

The general system of classification adopted here is that proposed by Simpson (1945) down to genera, while Allen (1939) has been followed in most cases for the species and subspecies. An exception is made in the case of Rodents where we have followed the recent work of Ellerman (1940, 1941, 1950). There has been no attempt to provide a systematic revision of any group, however desirable such a revision might be; such work would be outside the scope of this list. In a few particular instances we have not adhered to the authorities quoted in their usage of certain names, mainly because of a wish to avoid introducing confusion among readers who may be familiar with long-established scientific names. An instance is Simpson's use of the generic name *Strepsiceros* to include

not only the Kudus but (possibly as subgenera) *Tragelaphus* (Bushbucks) and *Limnotragus* (Sitatungas). In this case we have thought it less confusing to continue to use the well-established names *Tragelaphus* and *Limnotragus* as full genera.

In its arrangement the present work falls into three sections. The first and major part is the list of recorded names. Under the headings of Orders, Families and Genera the scientific name of each form is given, together with its author and a reference to the original publication in which it was described. All these original references have been checked during the preparation of this paper. Although the original references to nearly all the forms quoted may be found in Allen (1939), they are given here for the sake of completeness and to assist those who are unable to refer to Allen's work. While checking references, full use has been made of the MS notes added to many of the books in the libraries of the British Museum (Natural History) giving the results of Sherborn's, and others', researches into the dates of publication of these works or of the parts of which they are composed. The abbreviations used for scientific periodicals follow those given in the *World List of Scientific Periodicals* (ed. 2, 1934). Synonyms, which would add greatly to the bulk of the work without forming a corresponding addition to its usefulness, are not given here except in those few instances where we differ from Allen, Ellerman, or Simpson.

In deciding to which author any particular scientific name should be credited we have followed the dictates of custom rather than adhering strictly to the Rules of Zoological Nomenclature. For instance, we have followed most current authors in crediting certain names to Brisson (1762) and Oken (1816), and in considering the use of these names by these authors as valid. Hopwood (1947: 533) and Hershkovitz (1949: 289) have proposed respectively that generic names first used by Brisson in the second edition of his *Regnum Animale* (1762), and by Oken in his *Lehrbuch der Naturgeschichte* (1816) are non-Linnaean and therefore not available. It would appear best to refer the question of the validity or otherwise of names appearing in these two works to the International Commission of Zoological Nomenclature for their ruling.

Wherever possible, English and/or Kiswahili names are also given.

The type-locality of each form is given after its name and reference. In the case of Tanganyika localities the details of latitude and longitude are not given in the text since they are included in the gazetteer at the end. In the case of type-localities outside Tanganyika full details of latitude, longitude and altitude are given where possible.

Records of occurrence are listed by Districts, a comma separating localities within the same District, and a semicolon separating localities in different Districts. These records of occurrence are compiled from three main sources: (1) published records in the literature, (2) British Museum (Natural History) records of specimens in the collection, (3) personally collected data. It is hoped that the publication of these occurrence records, inadequate as they may be in many cases, may lead to the local gaps in our knowledge being filled by fresh investigation.

Species and subspecies which have been introduced under domestication are included in the list but are distinguished from the indigenous fauna by being shown enclosed in parentheses. Any taxonomic notes necessary are given as footnotes.

The second part of the work, the bibliography, consists of a list of all the papers and books dealing with Tanganyika mammals, either directly or indirectly, consulted during the preparation of this work, or of importance in relation to the systematics or distribution of some of the groups under discussion.

The concluding part of the work, the gazetteer, contains an alphabetical list of all the Tanganyika localities mentioned in the Checklist. The name of each locality is followed by the political District in which it occurs, altitude to the nearest hundred feet (usually), and the latitude and longitude. Where a locality is situated on a mountain the name of the mountain is also given. The quotation of latitude and longitude is considered of more importance than the name of the political District since the

boundaries and even the names of the latter are not infrequently changed, and in any case many localities are so obscure that exact fixing of their position is only possible by citing latitude and longitude.

We are indebted to various helpers who have given us records of occurrence, in particular Dr. C. H. N. Jackson and Messrs. C. J. P. Ionides and B. Cooper; and to Mrs. L. R. Swynnerton and Mrs. S. N. Hannam for assistance during the preparation of this paper. We also acknowledge our indebtedness to the staffs of the Mammal Room and the General and Zoological Libraries of the British Museum (Natural History), and the Radcliffe Science Library at Oxford, for guidance while unravelling several taxonomic problems and assistance in tracing many obscure references in old books and periodicals.

3. SYSTEMATIC LIST OF SPECIES AND SUBSPECIES, WITH NOTES ON DISTRIBUTION

Order INSECTIVORA Bowdich.

Family CHRYSOCHLORIDAE Mivart. Golden "Moles."

Kiswahili: *fuko*.

Genus CHLOROTALPA Roberts.

1924. *Chlorotalpa* Roberts, *Ann. Transv. Mus.* 10: 64, 31 Jan. Genotype, by original designation, *Chrysochloris duthieae* Broom.

CHLOROTALPA STUHLMANNI (Matschie). Ruwenzori Golden Mole.

1894. *Chrysochloris stuhlmanni* Matschie, *S.B. Ges. naturf. Fr. Berl.* 1894: 123. Kareiva, 4,000 feet, Butagu River, in Ukonjo, west slopes of Mt. Ruwenzori, Belgian Congo [0° 20' N., 29° 46' E.] [*vide* Moreau, Hopkins and Hayman, 1946: 393].

Records.—Uzungwa Mts. at Ihanganya, Kigogo, Ludilo; Livingstone Mts. at Madehani; Rungwe Mt. in the Nkuka Forest; Poroto Mts.

CHLOROTALPA TROPICALIS G. M. Allen and Loveridge. Uluguru Golden Mole.

1927. *Chlorotalpa tropicalis* G. M. Allen and Loveridge, *Proc. Boston Soc. nat. Hist.* 38: 418, Dec. Bagiro, ca 6,000 feet, north slopes of Uluguru Mts., Morogoro District, Tanganyika Territory.

Record.—Known only from the type-locality.

Family ERINACEIDAE Bonaparte. Hedgehogs.

Kiswahili: *kalunguyeye*.

Genus ATELERIX Pomel. African Hedgehogs.

1848. *Aterix* Pomel, *Arch. Sci. phys. nat.* 9: 251, Nov. As a subgenus of *Erinaceus* Linnaeus; genotype, by subsequent designation (Thomas, 1918, *Ann. Mag. nat. Hist.* 1: 195, Feb.), *Erinaceus albiventris* Wagner.

ATELERIX PRUNERI HINDEI (Thomas). Ukamba Hedgehogs.

1910. *Erinaceus hindei* Thomas, *Ann. Mag. nat. Hist.* 5: 193, Feb. Kitui, 3,500 feet, in Ukamba, Kitui District, Kenya Colony [1° 22' S., 38° 1' E].

Records.—Southern Masailand, south of Naabi Hill; Mpwapwa; Mbulu; Irangi, Isabi, Kondoa, Kwa Mtoro; Dodoma; Ikungi, Puma, Singida, Ushora; Ukara Island; Shinyanga; Tabora.

ATELERIX PRUNERI KILIMANUS Thomas. Kilimanjaro Hedgehogs.

1918. *Aterix kilimanus* Thomas, *Ann. Mag. nat. Hist.* 1: 232, March. Rombo, 5,300 feet, south-east slopes of Kilimanjaro, Moshi District, northern Tanganyika Territory.

Record.—Known only from the type-locality.

Family MACROSCOLIDIDAE Mivart. "Elephant Shrews."

Kiswahili: *sange*.

Genus NASILIO Thomas and Schwann.

1906. *Nasilio* Thomas and Schwann, *Abstr. Proc. zool. Soc. Lond.*, No. 33, p. 10, 5 June; *Proc. zool. Soc. Lond.* 1906: 578, 10 Oct. Genotype, by original designation, *Macroscelides brachyrhynchus* A. Smith.*

NASILIO BRACHYRHYNCHUS DELAMEREI (Thomas). Short-snouted Elephant Shrew.

1901. *Macroscelides Delamerei* Thomas, *Ann. Mag. nat. Hist.* 8: 155, footnote, 1 Aug. Athi River, 6,000 feet, eastern Kenya Colony.

Record.—Iringa.

Genus ELEPHANTULUS Thomas and Schwann.

Spectacled Elephant Shrews.

1906. *Elephantulus* Thomas and Schwann, *Abstr. Proc. zool. Soc. Lond.*, No. 33, p. 10, 5 June; *Proc. zool. Soc. Lond.* 1906: 577, 10 Oct. Genotype, by original designation, *Macroscelides rupestris* A. Smith.

ELEPHANTULUS INTUFI cf. E.I. INTUFI (A. Smith). Rufous Spectacled Elephant Shrew.

1836. *Macroscelides Intufi* A. Smith, *Rpt Exp. C. Afr.*, p. 42, June; 1839, *Ill. Zool. S. Afr., Mamm.*, part 6, pl. 12. Kurrichane, Transvaal, South Africa [ca 25° 30' S., 26° 15' E.].

Records.—"South-eastern Tanganyika in Kilwa, Lindi and Liwale Districts" [C. J. P. Ionides, *in litt.*].

ELEPHANTULUS RUFESCENS DUNDASI Dollman.

1910. *Elephantulus dundasi* Dollman, *Ann. Mag. nat. Hist.* 5: 95, Jan. Harich, 3,000 feet, near Lake Baringo, Kenya Colony.

Records.—Kibaya; Barungi; Nayu.

ELEPHANTULUS RUFESCENS OCULARIS Kershaw.

1921. *Elephantulus ocularis* Kershaw, *Ann. Mag. nat. Hist.* 8: 563, Nov. Dodoma, in Ugogo, central Tanganyika Territory.

Records.—Kidenge; Dodoma, Kikuyu; Iringa.

ELEPHANTULUS RUFESCENS PULCHER (Thomas). Uzinza Spectacled Elephant Shrew.

1894. *Macroscelides pulcher* Thomas, *Ann. Mag. nat. Hist.* 13: 69, Jan. Usambiro, in Uzinza, Mwanza District, Tanganyika Territory.

Records.—Lalago, Sanga, Zagayu; Mwanza, Usambiro; Samuye, Tinde; Katavi Mbuga.

ELEPHANTULUS RUFESCENS RENATUS Kershaw. Loveridge's Spectacled Elephant Shrew.

* Roberts (1944: 238) has pointed out that Smith, in his original description of *Macroscelides brachyrhynchus* (1836, *Rpt Exp. C. Afr.*, p. 42, June), omitted an "h" and spelt the trivial word "brachyrhynchus," and Roberts has proposed that this spelling should be retained. However, Article 19 of the International Rules of Zoological Nomenclature says: "The original orthography of a name is to be preserved unless an error of transcription, a *lapsus calami*, or a typographical error is evident." It is suggested that the original spelling "brachyrhynchus" is either a *lapsus calami* or a typographical error and that "brachyrhynchus" was intended and should be used. This will entail no change in current usage. It may be noted that Dr. Smith spelt the name correctly (that is "brachyrhynchus") in the title to Plate 13 of his *Illustrations of the Zoology of South Africa* (1839), but dropped the "h" in the accompanying text.

1923. *Elephantulus renatus* Kershaw, *Ann. Mag. nat. Hist.* 11: 588, May. Ikungi (Gwao's), Singida District, Tanganyika Territory.*

Records.—Kwa Mtoro; Ikungi, Nshinshi, Puma, Suna, Unyang'anyi.

Genus PETRODROMUS Peters. **Four-toed Elephant Shrews.**

1846. *Petrodromus* Peters, *Ber. Verh. preuss. Akad. Wiss., Berl.* 1846: 257, Aug. Genotype, by monotypy, *Petrodromus tetradactylus* Peters.

1916. *Cercocetus* Hollister, *Smithson. misc. Coll.* 66 (1): 1, 10 Feb. Genotype, by original designation, *Petrodromus sultan* Thomas.

1918. *Mesocetus* Thomas, *Ann. Mag. nat. Hist.* 1: 336, May. Genotype, by original designation, *Petrodromus rovumae* Thomas.

PETRODROMUS TETRADACTYLUS cf. P. T. TETRADACTYLUS Peters. **Zambesi Four-toed Elephant Shrew.**

1846. *Petrodromus tetradactylus* Peters, *Ber. Verh. preuss. Akad. Wiss., Berl.* 1846: 258, pl. 3, f. 4, Aug. Tete, south bank of the Zambesi River, Boroma District, Portuguese East Africa [16° 9' S., 33° 36' E., ca 250 feet].

Records.—Ndarema; Mandera; Maurui; Morogoro; Mtyangimburi.

PETRODROMUS TETRADACTYLUS MATSCHIEI Neumann. **Barungi Four-toed Elephant Shrew.**

1900. *Petrodromus matschiei* Neumann, *Zool. Jb., Syst.* 13: 540, 541, 10 Oct. Barungi, Kondo District, central Tanganyika Territory [*vide* Moreau, Hopkins and Hayman, 1946: 392].

Records.—Barungi; Ugogo; Unyang'anyi; Mahaka; Lupa River; Shinyanga; Igonda, Isikisia, Kakoma, Kigwa, Tabora, Ugalla; Mtisi River.

PETRODROMUS SULTAN SULTAN Thomas. **Mombasa Four-toed Elephant Shrew.**

1897. *P[etrodromus] sultani* Thomas, *Proc. zool. Soc. Lond.* 1897: 435, Oct. Mombasa, east coast of Kenya Colony [4° 3' S., 39° 40' E., sea-level]

1898. *P[etrodromus] sultan* Thomas, *Proc. zool. Soc. Lond.* 1897: 928, text and footnote, April. Correction of spelling of trivial name: "Misprinted *sultani* in the original description. The name is a substantive in apposition."

Records.—Amboni, Usambara Mts. at Amani; Mandera; Uzungwa Mts. at Kigogo; Mafia and Zanzibar Islands.

PETRODROMUS ROVUMAE ROVUMAE Thomas. **Rovuma Four-toed Elephant Shrew.**

1897. *P[etrodromus] rovumae* Thomas, *Proc. zool. Soc. Lond.* 1897: 434, Oct. Rovuma River, 100 miles inland, Newala District, south-eastern Tanganyika Territory.

Records.—Murembwi River; Mbanja, Nchingidi; Rovuma River.

PETRODROMUS ROVUMAE NIGRISETA Neumann. **Ruvu Four-toed Elephant Shrew.**

1900. *Petrodromus nigriseta* Neumann, *Zool. Jb., Syst.* 13: 541, footnote, 10 Oct. Maurui, lower Ruvu (or Pangani) River, Lushoto District, Tanganyika Territory.

Records.—Maurui; Mandera; Morogoro, Uluguru Mts. at Simbini; Bogoti, Chanzuru, Kilosa, Kimamba, Kipera.

Genus RHYNCHOCYON Peters.

1847. *Rhynchocyon* Peters, *Ber. Verh. preuss. Akad. Wiss., Berl.* 1847: 36, Feb. Genotype, by monotypy, *Rhynchocyon cirnei* Peters.

* Kershaw, in his original description of *E. renatus*, gave the position of Gwao's as "30° 40' E., 4° 25' S.," which is incorrect by some 300 miles. Ikungi, which is the name of the late Jumbe Gwao's village, lies at 5° 7' S., 34° 47' E.

† Specimens from this locality were recorded by G. M. Allen and Loveridge (1933: 55) as *P. matschiei venustus* Thomas (1903, *Ann. Mag. nat. Hist.* 12: 339, Sept.; Namwiwe, 4,000 feet, near Namitawa, northern Nyasaland, ca 10° S., 33° E.). Unyang'anyi is only sixty miles west of Barungi, the type-locality of *P. t. matschiei*, and it seems much more likely, if only on geographical grounds, that these specimens are referable to the latter form than to *P. t. venustus*, whose type-locality lies more than 350 miles to the south.

Subgenus RHYNCHOCYON Peters

Chequered Elephant Shrews.**RHYNCHOCYON CIRNEI HENDERSONI Thomas. Nyasaland Chequered Elephant Shrew.**

1902. *Rhynchocyon hendersoni* Thomas, *Ann. Mag. nat. Hist.* **10**: 403, Nov. Nyika Plateau, probably near Livingstonia, west of Lake Nyasa, northern Nyasaland [between 10° and 11° S., 33° 40' and 34° 10' E., 6,000 to 8,700 feet] [*vide* Allen and Loveridge, 1933: 53].

Records.—Dabaga, Iringa, Kigogo; Nkuka Forest.

RHYNCHOCYON CIRNEI MACRURUS Günther. Kirk's Chequered Elephant Shrew.

1881. *Rhynchocyon macrurus* Günther. *Proc. zool. Soc. Lond.* 1881: 163, June. Rovuma River east of 38° 45' E., boundary between Tanganyika Territory and Portuguese East Africa.

Records.—"The forest country of Kilwa, Liwale (Liwale, Murembwi River), Lindi, Mikindani (Kitaya), Newala, Masasi, Tunduru and Songea Districts" [C. J. P. Ionides, *in litt.*].

RHYNCHOCYON CIRNEI SWYNNERTONI Kershaw. Swynnerton's Chequered Elephant Shrew.

1923. *Rhynchocyon swynnertoni* Kershaw, *Ann. Mag. nat. Hist.* **11**: 587, May. Kipera, Kilosa District, Tanganyika Territory.

Record.—Known only from the type-locality.

Subgenus RHINONAX Thomas. **Black-and-red Elephant Shrews.**

1918. *Rhinonax* Thomas, *Ann. Mag. nat. Hist.* **1**: 370, May. As a subgenus of *Rhynchocyon* Peters; type, by original designation, *Rhynchocyon chrysopygus* Günther.

RHYNCHOCYON PETERSI PETERSI Bocage. Peter's Black-and-red Elephant Shrew.

1880. *Rhynchocyon Petersi* Bocage, *J. Sci. math. phys. nat. Lisboa* **7**: 159, pl. 4, f. 2, Feb. Coast of East Africa, probably opposite Zanzibar Island [*vide* Dollman, 1912, *Ann. Mag. nat. Hist.* **10**: 131, July].

1900. *Rhynchocyon petersi fischeri* Neumann, *Zool. Jb., Syst.* **13**: 543, 10 Oct. Uzigua, between 5° 20' and 5° 30' S., and between 37° 50' and 38° 40' E., north-eastern Tanganyika Territory.

Records.—Pangani; Dunda, Manderu; Usambara Mts. at Bumbuli, Lushoto, Magamba; Pugu; Uzigua; Uluguru Mts. at Mkangazi; Kibaya. G. M. Allen and Loveridge (1933: 55) give a doubtful sight record from the Nkuka Forest.

RHYNCHOCYON PETERSI ADERSI Dollman. Zanzibar Black-and-red Elephant Shrew.

1912. *Rhynchocyon adersi* Dollman, *Ann. Mag. nat. Hist.* **10**: 130, July. Zanzibar Island.

Records.—Mafia and Zanzibar Islands.

RHYNCHOCYON PETERSI MELANURUS Neumann. Lindi Black-and-red Elephant Shrew.

1900. *Rhynchocyon petersi melanurus* Neumann, *Zool. Jb., Syst.* **13**: 542, 10 Oct. Lindi, south-east coast of Tanganyika Territory [*vide* Moreau, Hopkins and Hayman, 1946: 392].

Records.—Lindi, Nchingidi.

Family SORICIDÆ Gray. **Shrews.**

Kiswahili: *kirukanjia*.

Genus CROCIDURA Wagler. **White-toothed Shrews.**

1832. *Crocidura* Wagler, Oken's *Isis* 1832: 275. Genotype *Sorex leucodon* Hermann. *CROCIDURA BICOLOR* ELGONIUS Osgood.

1910. *Crocidura bicolor elgonius* Osgood, *Ann. Mag. nat. Hist.* **5**: 369, April. Twere (Kirui's), 6,000 to 7,000 feet, south slopes of Mt. Elgon, North Kavirondo

District, Kenya Colony [ca 0° 46' N., 34° 37' E.].

Records.—Kingori Juu; Uluguru Mts. at Nyange.

CROCIDURA BICOLOR cf. C. B. *HENDERSONI* Dollman.

1915. [*Crocidura bicolor*] *hendersoni* Dollman, *Ann. Mag. nat. Hist.* 15: 517, May; 1916, *op. cit.* 17: 189, Feb. Livingstonia, 4,040 feet, eastern slopes of Nyika Plateau, northern Nyasaland [10° 37' S., 34° 7' E.].

Record.—Mbanja.

CROCIDURA BICOLOR SANSIBARICA Neumann.

1900. *Crocidura bicolor sansibarica* Neumann, *Zool. Jb., Syst.* 13: 544, 10 Oct. Muyuni (Mojoni), Zanzibar Island South.

Records.—Pemba and Zanzibar Islands.

CROCIDURA BLOYETI Dekeyser.

1943. *Crocidura bloyeti* Dekeyser, *Bull. Mus. Hist. nat. Paris* 15: 155. Kondoa, in Iiangi, central Tanganyika Territory.

Record.—Known only from the type-locality.

CROCIDURA FISCHERI Pagenstecher. *Fischer's Shrew*.

1885. *Crocidura Fischeri* Pagenstecher, *Jb. hamburg. wiss. Anst.* 2: 34, pl. f. 1-3. Nguruman, west of Lake Magadi, Kenya Colony [between 1° 50' and 2° S., 36° 5' E., 2,500 to 6,000 feet].

Record.—Near Engare Nanyuki.

CROCIDURA FUMOSA JOHNSTONI Dollman.

1915. [*Crocidura*] *fumosa johnstoni* Dollman, *Ann. Mag. nat. Hist.* 15: 510, May; *op. cit.* 16: 372, Oct. Chiromo, junction of Shire and Ruw Rivers, Lower Shire District, southern Nyasaland [16° 30' S., 35° 10' E.].

Record.—Morogoro.

CROCIDURA FUMOSA cf. C. F. *SCHISTACEA* Osgood.

1910. *Crocidura fumosa schistacea* Osgood, *Field Mus. Publ., Zool.* 10: 20, 7 April. Lukenya Hill, Machakos District, Kenya Colony [1° 30' S., 37° 4' E., 5,000 to 6,029 feet.]

Records.—West slope of Kilimanjaro at 8,600 feet, Kibongoto; Engare Nanyuki; Endamarid River.

CROCIDURA GRACILIPES Peters. *Von der Decken's Shrew*.

1870. *Crocidura (Cr.) gracilipes* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1870: 590. Probably somewhere between the coast and the Nguru Mts., and between the Uluguru Mts. and the Usambara Mts., eastern Tanganyika Territory [*vide* Moreau, Hopkins and Hayman, 1946: 395].

Records.—Bagamoyo; Usambara Mts. at Ndarema; Morogoro; Rombo.

CROCIDURA HILDEGARDEAE HILDEGARDEAE Thomas*. *Mrs. Hinde's Shrew*.

1904. *Crocidura Hildegardeae* Thomas, *Ann. Mag. nat. Hist.* 14: 240, Sept. Fort Hall, 1,300 metres, Kenya Colony [0° 42' S., 37° 40' E.].

Records.—Amani, Tanga; Lyamungu; Kigogo; Madehani; Poroto Mts. at Igali.

CROCIDURA HIRTA HIRTA Peters. *Zambesi Little Red Shrew*.

1852. *Crocidura hirta* Peters, *Reise Mossamb., Säugeth.*, p. 78, pl. 18, f. 2. Tete, south bank of Zambesi River, Boroma District, Portuguese East Africa [16° 9' S., 33° 36' E., ca 250 feet].

Records.—Lindi, Mbanja, Nchingidi; Kitaya, Mikindani.

CROCIDURA HIRTA VELUTINA Thomas.

1904. *Crocidura velutina* Thomas, *Ann. Mag. nat. Hist.* 14: 237, Sept. Usambara,

* Hollister (1918: 64) considers that *C.h. hildegardeae* Thomas is possibly a synonym of *C. gracilipes* Peters.

Lushoto District, north-eastern Tanganyika Territory.

Records.—Amboni, Bomole Hill, Magroto; Bagamoyo; Dar es Salaam; between Kibongoto and Momela Lake; Morogoro, Nyange, Nyingwa; Kilosa, Kimamba; Ikungi, Puma; Isikisia; Iringa; Njombe.

CROCIDURA LUNA Dollman.

1910. *Crocidura luna* Dollman, *Ann. Mag. nat. Hist.* 5: 175, Feb. Bukenya River, 3,400 feet. Katanga, Belgian Congo.

Record.—Morogoro.

CROCIDURA MARTIENSSENI Neumann.

1900. *Crocidura martiensseni* Neumann, *Zool. Jb., Syst.* 13: 544, 10 Oct. Magroto Plantation, south-east Usambara Mts., Tanga District, north-eastern Tanganyika Territory [*vide* Hollister, 1918: 43].

Records.—Magroto; south-east slopes of Kilimanjaro above Marangu, about 6,600 feet; Bagiro, Vituri.

CROCIDURA MAURISCA GEATA G. M. Allen and Loveridge.

1927. *Crocidura maurisca geata* G. M. Allen and Loveridge, *Proc. Boston Soc. nat. Hist.* 38: 417, Dec. Nyingwa, ca 7,500 feet, east slopes of Uluguru Mts., Morogoro District, Tanganyika Territory.

Records.—Kibongoto; Engare Nanyuki; Nyingwa, Vituri.

CROCIDURA MONAX Thomas.

1910. *Crocidura monax* Thomas, *Ann. Mag. nat. Hist.* 6: 310, Sept. Rombo, 6,000 feet, south-east slopes of Kilimanjaro, Moshi District, Tanganyika Territory.

Records.—Rombo; Nyingwa.

CROCIDURA NEAVEI Wroughton. Neave's Shrew.

1907. *Crocidura neavei* Wroughton, *Manchr. Mem.* 51 (5): 7, 13 March. Upper Kafue River, 4,000 feet, near Ndola, Northern Rhodesia [12° 50' S., 28° 40' E.].

Record.—Uzungwa Mts. at Kigogo.

CROCIDURA NYANSAE KIJABAE J. A. Allen*.

1909. *Crocidura kijabae* J. A. Allen, *Bull. Amer. Mus. nat. Hist.* 26: 173, 19 March. Kijabe, Kenya Colony [0° 55' S., 36° 4' E., 6,000 to 7,000 feet.]

Record.—Rim of Ngorongoro Crater.

CROCIDURA NYANSAE KIVU Osgood.

1910. *Crocidura flavescens kivu* Osgood, *Ann. Mag. nat. Hist.* 5: 370, April. Lake Kivu, 4,900 feet, eastern Belgian Congo [2° S., 29° 5' E.].

Records.—Uzungwa Mts. at Dabaga, Kigogo; Ukerewe Island.

CROCIDURA SACRALIS Peters.

1852. *Crocidura sacralis* Peters, *Reise Mossamb., Säugeth.*, p. 82, pl. 18, f. 3. Caba-ceira Peninsula, about 15° S., east coast of Portuguese East Africa.

Record.—Lindi.

CROCIDURA SUAHILAE Heller.

1912. *Crocidura suahelae* Heller, *Smithson. misc. Coll.* 60 (12): 6, 4 Nov. Mazeras, 12 miles north-west of Mombasa, Kilifi District, coastal Kenya Colony [3° 57' S., 39° 32' E., ca 600 feet].

Record.—Bagamoyo.

Genus *SUNCUS* Ehrenberg.

1833. *Suncus* Ehrenberg, *Sym. Phys., Mamm.* 2: sign. k, Sept. Genotype *Suncus sacer* Ehrenberg, 1833 = *Sorex crassicaudus* Lichtenstein, 1827.

* Hollister (1918: 43) considers *C.n. kijabae* J. A. Allen to be doubtfully distinct from *C.n. nyansae* Neumann (1900, *Zool. Jb., Syst.* 13: 544, 10 Oct.; Fort Thruston, north shore of Lake Victoria, Uganda Protectorate, 0° 24' N., 33° 22' E., 2,750 feet).

SUNCUS CAERULAEUS (Kerr)*.

1792. *Sorex caerulaeus* Kerr, *Anim. Kingd. Linn.*, pp. xxvii (trivial name here spelt "*cerulaeus*"), 207. Java, and other islands in the East Indies.

Status.—Introduced into Pemba and Zanzibar Islands).

SUNCUS LEUCURA (Matschie).

1891. *Crocidura albicauda* Noack, *Jb. hamburg. wiss. Anst.* 9: 117. Zanzibar Island. Not *Crocidura albicauda* Peters, 1866.

1894. *Pachyura leucura* Matschie, *S.B.Ges. naturf. Fr. Berl.* 1894: 205. Zanzibar Island [*vide* Moreau, Hopkins and Hayman, 1946: 397].

Records.—Zanzibar Island, and "between the coast and Lake Victoria."

SUNCUS LIXUS LIXUS (Thomas).

1898. *Crocidura (Pachyura) lixa* Thomas, *Proc. zool. Soc. Lond.* 1897: 930, April. Nyika Plateau, west of Lake Nyasa, northern Nyasaland [between 10° and 11° S., and between 33° 40' and 34° 10' E., 6,000 to 8,700 feet].

Record.—Mwanza.

SUNCUS LIXUS AEQUATORIUS (Heller).

1912. *Pachyura lixa aequatoria* Heller, *Smithson. misc. Coll.* 60 (12): 4, 4 Nov. Sagala Hills, 4,000 feet, Taita District, Kenya Colony [3° 30' S., 38° 35' E.].

Record.—Dodoma.

SUNCUS VARILLA MINOR G. M. Allen and Loveridge.

1933. *Suncus varilla minor* G. M. Allen and Loveridge, *Bull. Mus. comp. Zool. Harv.* 75: 57, Feb. Kitungulu, ca 4,000 feet, Ufipa District, Tanganyika Territory.

Record.—Known only from the type-locality.

Order CHIROPTERA Blumenbach. Bats.

Kiswahili: *popo*.

Suborder MEGACHIROPTERA Dobson. Fruit-eating Bats.

Family PTEROPODIDAE Bonaparte.

Genus ROUSETTUS Gray. "Dog" Bats, Rousette Bats.

1821. *Rousettus* Gray, *London med. Repos.* 15: 299, 1 April. Genotype, by monotypy and original designation, *Pteropus aegyptiacus* E. Geoffroy.

Subgenus ROUSETTUS Gray.

ROUSETTUS LEACHII (A. Smith).

1829. *Pteropus Leachii* A. Smith, *Zool. J.* 4: 433, May. Gardens about Cape Town, Cape Province, South Africa [ca 33° 55' S., 18° 28' E.].

Records.—Mkulumuzi Caves, Tanga; Pangani; Bukoba.

Subgenus STENONYCTERIS Andersen.

1912. *Stenonycteris* Andersen, *Cat. Chiropt. Brit. Mus.*, ed. 2, 1: 23. As a subgenus of *Rousettus* Gray; type, by monotypy and original designation, *Rousettus lanosus* Thomas.

ROUSETTUS KEMPI Thomas.

1909. *Rousettus kempi* Thomas, *Ann. Mag. nat. Hist.* 4: 543, Dec. Twere (Kirui's), 6,000 feet, south slopes of Mt. Elgon, North Kavirondo District, Kenya Colony [ca 0° 46' N., 34° 37' E.].

Record.—Uluguru Mts. at Bagiro.

* Possibly synonymous with *Suncus murinus* (Linnaeus, 1766, *Syst. Nat.*, ed. 12, 1: 74. Java, (East Indies.))

Subgenus LISSONYCTERIS Andersen.

1912. *Lissonycteris* Andersen, *Cat. Chiropt. Brit. Mus.*, ed. 2, 1: 23. As a subgenus of *Rousettus* Gray; type, by monotypy and original designation, *Rousettus angolensis* (Bocage).

ROUSETTUS ANGOLENSIS (Bocage).

1898. *Cynonycteris Angolensis* Bocage, *J. Sci. math. phys. nat.*, *Lisboa* 5: 133, 138, text-f. 1, June. Pungo Andongo, Angola [9° 40' S., 15° 40' E., 1,200 metres].

Records.—Magroto, Tanga; Kibongoto; Bukoba.

Genus PTEROPUS Brisson. Flying "Foxes".

1762. *Pteropus* Brisson, *Regn. Anim.*, ed. 2, pp. 13, 153-155. Genotype, by tautonymy and subsequent designation (Merriam, 1895, *Science* 1: 376, 5 Apr.), *Pteropus pteropus* Brisson ("Pteropus rufus aut niger, auriculis brevibus acutiusculus . . . La Roussette," of Reunion)= *Vespertilio vampirus niger* Kerr.

1777. *Pteropus* Erxleben, *Syst. Regn. Anim.*, pp. xxxiii, 130. First use of the name by an author following the Linnaean system. Genotype, by subsequent designation (Andersen, 1912: 220), *Pteropus vampyrus* (Linnaeus), var. *a* Erxleben=*Vespertilio vampirus niger* Kerr.

PTEROPUS COMORENSIS Nicoll.

1908. *Pteropus comorensis* Nicoll, *Three Voyages of a Naturalist*, pp. 87, 88, 90. Buzi Islet, in Mayotte Harbour, Comoro Islands [12° 48' S., 45° 16' E.] [*vide* Moreau, Hopkins and Hayman, 1946: 398].

Record.—Mafia Island.

PTEROPUS VOELTZKOWI Matschie.

1909. *Pteropus* (*Spectrum*) *voeltzkowi* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1909: 486, Oct. Fufuni, Pemba Island.

Record.—Endemic on Pemba Island.

Genus EPOMOPHORUS Bennett. Epauletted Fruit Bats.

1836. *Epomophorus* Bennett, *Proc. zool. Soc. Lond.* 1835: 149, 12 Feb.; *Trans. zool. Soc. Lond.* 2: 33, 2 Oct. Genotype, by monotypy, *Pteropus epomophorus* Bennett=*Pteropus gambianus* Ogilby.

EPOMOPHORUS ANURUS Heuglin.

1864. *Epomophorus anurus* Heuglin, *Nova Acta Leop. Carol.* 31 (7): 12. Bongo, Bahr-el-Ghazal, Anglo-Egyptian Sudan [ca 7° N., 28° E.].

Records.—Nguruimi; Ukerewe Island; Ilo.

EPOMOPHORUS LABIATUS MINOR Dobson.

1880. *Epomophorus minor* Dobson, *Proc. zool. Soc. Lond.* 1879: 715, April. Zanzibar Island.

Records.—Bagamoyo; Dar es Salaam; Mwembe; Kisaki, Morogoro; Kilosa; Igonda, Tabora; Kasulu; Malagarasi, Ujiji; Mwaya.

EPOMOPHORUS WAHLBERGI WAHLBERGI (Sundevall).

1846. *Pteropus Wahlbergi* Sundevall, *Ofvers. Vetensk. Akad. Förh.*, *Stockh.* 3: 118. Near Durban, and in the interior of Natal.

Records.—Dar es Salaam, Vikindu; Lindi; generally distributed throughout Liwale and Mikindani Districts; occasional in Kilwa District; Pemba and Zanzibar Islands (in these two islands intergrades are found between this and the next race).

EPOMOPHORUS WAHLBERGI HALDEMANI (Halowell).

1846. *Pteropus Haldemani* Halowell, *Proc. Acad. nat. Sci. Philad.* 3: 52, June. West Africa, possibly Liberia.

Records.—Engare Nairobi, Old Moshi.

Genus MICROPTEROPUS Matschie. Dwarf Epauletted Fruit Bats.

1899. *Micropteropus* Matschie, *Flederm. Berlin. Mus.*, *Megachiropt.*, pp. 36, 37, 57. As a subgenus of *Epomophorus* Bennett; genotype, by original designation, *Epomophorus pusillus* Peters.

MICROPTEROPUS PUSILLUS (Peters).

1860. *Epomophorus schoënsis* Tomes, *Proc. zool. Soc. Lond.* 1860: 56; 1861, *op. cit.* 1861: pl. 1.f, 4, 4a, skull. Gambia. Not *Epomophorus schoënsis* (Rüppell), 1842.

1867. *Epomophorus pusillus* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1867: 870. New name for *Epomophorus schoënsis* Tomes, preoccupied. Gambia, West Africa* (fixed by Andersen, 1912: 559).

Records.—Nguruimi, Lower Mara River.

Genus EPOMOPS Gray.

1866. *Epomops* Gray, *Proc. zool. Soc. Lond.* 1866: 65; 1870, *Cat. Monkeys, Lemurs and Fruit-eating Bats Coll. Brit. Mus.*, pp. 100, 126. Genotype, by monotypy, *Epomophorus franqueti* Tomes.

EPOMOPS FRANQUETI FRANQUETI (Tomes).

1860. *Epomophorus franqueti* Tomes, *Proc. zool. Soc. Lond.* 1860: 54, pl. 75, Feb-May; 1861, *op. cit.* 1861: pl. 1, f. 3, 3a, 3b, skull. Gaboon, West Africa.

Record.—Bukoba.

Genus EIDOLON Rafinesque. Yellow-haired Fruit Bats.

1815. *Eidolon* Rafinesque, *Analyse de la Nature*, p. 54. Based on E. Geoffroy's "Rousettus à queue" (1810, *Ann. Mus. Hist. nat. Paris* 15: 94); genotype, by subsequent designation (Andersen, 1908, *Ann. Mag. nat. Hist.* 1: 432, 1 May), *Pteropus stramineus* E. Geoffroy = *Vespertilio vampyrus helvus* Kerr.

EIDOLON HELVUM (Kerr).

1792. *Vesp[ertilio] Vampyrus helvus* Kerr, *Anim. Kingd. Linn.*, p. 91. Senegal, West Africa (designated by Andersen, 1907, *Ann. Mag. nat. Hist.* 19: 504).

Records.—Amani; Weruweru River; Mahaka; Bukoba; Pemba and Zanzibar Islands.

Suborder MICROCHIROPTERA Dobson. Insect-eating Bats.

Family EMBALLONURIDAE Dobson. Sheath-tailed Bats.

Genus COLEURA Peters.

1867. *Colëura* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1867: 479. Genotype, by monotypy, *Emballonura afra* Peters.

COLEURA AFRA (Peters). Split-nosed Bat.

1852. *Emballonura afra* Peters, *Reise Mossamb., Säugeth.*, p. 51, pl. 12; pl. 13, f. 18, 19. Tete, south bank of Zambesi River, Boroma District, Portuguese East Africa [16° 9' S., 33° 36' E., ca 250 feet].

Records.—Mkulumuzi Caves; Mwanza; possibly Pemba Island.

* G. M. Allen (1939: 58) gave the type-locality of *M. pusillus* as "Yoruba, southern Nigeria," but this is wrong. *M. pusillus* is technically based on a description and figures by Tomes (*supra cit.*), under the name "*Epomophorus schoënsis* (Rüppell)," of a specimen from Gambia which was formerly in Tomes's collection but is now lost. Peters was able to show that this specimen was quite distinct from *E. schoënsis* (Rüppell) and gave it the new name "*Epomophorus pusillus*." At the same time he referred to another specimen in the Berlin Museum's collection from Yoruba, southern Nigeria, which agreed with Tomes's description of the specimen which was made the type of *E. pusillus*. Andersen (*loc. cit.*) later fixed Gambia as the type-locality for *M. pusillus* (Peters.)

Genus TAPHOZOUS Oken. **Tomb Bats.**

1816. *Taphozous* Oken, *Lehrb. Naturgesch.* 3 (2): x (here spelt *Thaphozous*), 926. Genotype *Taphozous senegalensis* Desmarest.

1818. *Taphozous* E. Geoffroy, *Descr. Egypte* 2: 113. Genotype *Taphozous perforatus* E. Geoffroy. [Though dated 1812, this work was not published until 1818].

Subgenus TAPHOZOUS Oken.

TAPHOZOUS MAURITIANUS MAURITIANUS E. Geoffroy.

1818. *Taphozous mauritianus* E. Geoffroy, *Descr. Egypte* 2: 127. Mauritius [20° S., 57° 30' E.].

Records.—Amani, Tanga; Pangani; Dar es Salaam; Morogoro; Mbanja; Kilosa; Itende; Unyang'anyi; Tabora; Ujiji; Mwaya; Zanzibar Island.

TAPHOZOUS SUDANI Thomas.

1915. *Taphozous sudani* Thomas, *Ann. Mag. nat. Hist.* 15: 561, June. Mongala, Bahr-el-Jebel, Anglo-Egyptian Sudan [5° 12' N., 31° 46' E., 1,460 feet].

Record.—Poroto Mts. at Igali.

Subgenus LIPONYCTERIS Thomas.

1922. *Liponycteris* Thomas, *Ann. Mag. nat. Hist.* 9: 267, March. Genotype, by original designation, *Taphozous nudiventris* Cretzschmar.

TAPHOZOUS NUDIVENTRIS Cretzschmar.

1830-31. *Taphozous nudiventris* Cretzschmar, in Rüppell's *Atlas Reise nördl. Afr., Säugeth.*, p. 70, pl. 27b. Giza, Egypt.

Records.—Nshinshi; Shanwa.

Family NYCTERIDAE Dobson. **Hollow-faced Bats.**

Genus NYCTERIS E. Geoffroy and G. Cuvier. **Hispid Bats, Hollow-faced Bats.**

1795. *Nycteris* E. Geoffroy and G. Cuvier, *Mag. encycl.* 1795 (2): 186. Genotype *Vespertilio hispidus* Schreber. *Nomen nudum*. Adopted as the correct name for this genus of bats [vide *Opin. int. Comm. zool. Nom.*, No. 111, in *Smithson. misc. Coll.* 73 (6): 18, 8 June, 1929].

NYCTERIS AETHIOPICA ORIANA Kershaw.

1922. *Nycteris oriana* Kershaw, *Ann. Mag. nat. Hist.* 10: 179, Aug. Chiromo, Lower Shire District, Nyasaland [16° 32' S., 35° 9' E., 200 feet].

Record.—Mbanja; Banagi.

NYCTERIS CAPENSIS A. Smith. **Cape Hollow-faced Bat.**

1829. *Nycteris Capensis* A. Smith, *Zool. J.* 4: 434, May. "The interior parts of South Africa as well as upon the Eastern coast"*.

Records.—"Zanzibar Coast," i.e. the coastal part of East Africa opposite Zanzibar Island; Usambara Mts. at Amani; Uluguru Mts. at Bagiro, Mkangazi; Kilosa; Kilimanjaro; Irangi, Sandawe; Gulwe, Itende; Ikungi, Suna; Zagayu.

NYCTERIS DAMARENSIS DAMARENSIS Peters†. **Damaraland Hollow-faced Bat.**

1871. *Nycteris damarensis* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1870: 905.

Otjimbingue, Swakop River, Damaraland, South West Africa [22° 15' S., 16° 10' E.].

Record.—Saranda.

* The late Dr. Austin Roberts informed the authors [*in litt.*] that it had been his intention to restrict the type-locality of *N. capensis* to "Swellendam, 500 feet, south-western Cape Province, South Africa."

† Hill and Carter (1941: 37) consider that *N. damarensis* is a subspecies of *N. capensis* A. Smith.

NYCTERIS GRANDIS Peters. Giant Hollow-faced Bat.

1865. *Nycteris grandis* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1865: 358; 1871, *op. cit.* 1870: 906. "Guinea," West Africa.

Records.—Pemba and Zanzibar Islands.

NYCTERIS HISPIDA (Schreber). Small-eared Hollow-faced Bat.

1774. *Vespertilio hispidus* Schreber, *Säugeth.* 1: 169, 188, pl. 56. Senegal, West Africa.

Records.—Maurui; Bagiro; Madazini; Mwanza; Zanzibar Island.

NYCTERIS LUTEOLA Thomas.

1901. *Nycteris aethiopica luteola* Thomas, *Ann. Mag. nat. Hist.* 8: 30, July. Kitui, 3,500 feet, in Ukamba, Kitui District, Kenya Colony [$1^{\circ} 22' S.$, $38^{\circ} 1' E.$].

Records.—Kilosa; Unyang'anyi; Mto wa Mbu; Zagayu; Zanzibar Island.

NYCTERIS MARICA Kershaw.

1923. *Nycteris marica* Kershaw, *Ann. Mag. nat. Hist.* 12: 534, Oct. Tendigo, Kilosa District, Tanganyika Territory.

Record.—Known only from the type-locality.

NYCTERIS REVOILII Robin.

1881. *Nycteris Recoilii* Robin, *Bull. Soc. philom., Paris* 5: 90. Somaliland (British or Italian) north of $10^{\circ} N.$ [*vide* Moreau, Hopkins and Hayman, 1946: 399].

Records.—Morogoro; Mwapwa; Unyang'anyi; Livingstone Mts. at Madchani.

NYCTERIS THEBAICA cf N.T. AURANTIACA (de Beaux). Large-eared Hollow-faced Bat.

1923. *Petalia (Nycteris) thebaica aurantiaca* de Beaux, *Atti Soc. ital. Sci. nat.* 62: 91, July. Archer's Post, Northern Uaso Nyiro, Kenya Colony [$0^{\circ} 36' N.$, $37^{\circ} 37' E.$, 2,760 feet].

Records.—Tanga; Bagamoyo; Vikindu; Mbanja; Ndarema; Arusha Chini, Kibongoto, Kilimanjaro; Engare Nanyuki; Irangi, Sandawe; Bukoba; Zanzibar Island.

Family MEGADERMATIDAE Allen. Big-eared Bats.**Genus MEGADERMA E. Geoffroy. False Vampires.**

1810. *Megaderma* E. Geoffroy, *Ann. Mus. Hist. nat. Paris* 15: 190. Genotype *Vespertilio spasma* Linnaeus.

Subgenus CARDIODERMA Peters.

1873. *Cardioderma* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1873: 488, June. As a subgenus of *Megaderma* E. Geoffroy; type, by original designation, *Megaderma cor* Peters.

MEGADERMA COR Peters. Heart-nosed Big-eared Bat.

1872. *Megaderma cor* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1872: 194. Abyssinia.

Records.—Kilimanjaro; Mto wa Mbu; Ushora.

Genus LAVIA Gray. Yellow-winged Bats.

1838. *Lavia* Gray, *Mag. Zool. Bot.* 2: 490, Feb. Genotype, by monotypy, *Megaderma frons* E. Geoffroy.

LAVIA FRONS REX Miller*.

1905. *Lavia rex* Miller, *Proc. biol. Soc. Wash.* 18: 227, 9 Dec. Taveta, south-east of Kilimanjaro, Taita District, Kenya Colony [$3^{\circ} 25' S.$, $37^{\circ} 40' E.$, 2,500 feet].

* Considered by Andersen and Wroughton (1907, *Ann. Mag. nat. Hist.* 19: 139, Feb.) to be synonymous with *L.f. frons* (E. Geoffroy, 1810, *Ann. Mus. Hist. nat. Paris* 15: 192. Senegal, West Africa).

Records.—Bagamoyo; Dar es Salaam; Maurui; Kisaki, Masimba, Morogoro; Kilosa; Engare Nairobi, Kilimanjaro; Ngaserai, Ol Doinyo Lengai; Saranda; Nduguyu River; Nshinshi, Ruruma, Wembere Flats; Kome Island, Ukerewe Island; 16 miles south of Kasulu; Ujiji; Mangogo, Namanyere; Zanzibar Island.

Family RHINOLOPHIDAE Bell.

Genus RHINOLOPHUS Lacepède. Horseshoe Bats.

1799. *Rhinolophus* Lacepède, *Tabl. Mammif.*, p. 15. Genotype, by monotypy, *Rhinolophus ferrum-equinum* (Schreber).

RHINOLOPHUS DARLINGI DARLINGI Andersen.

1905. *Rhinolophus Darlingi* Andersen, *Ann. Mag. nat. Hist.* 15: 70, Jan. Mazoe, 4,000 feet, in Mashonaland, Southern Rhodesia.

Record.—Banagi.

RHINOLOPHUS DECKENII Peters. Von der Decken's Horseshoe Bat.

1868. *Rhinolophus Deckenii* Peters, *Mber. preuss. Akad., Wiss., Berl.* 1867: 705. Coast of East Africa, probably opposite Zanzibar Island.

Records.—Known only from Rombo and from von der Decken's original specimens from the coastal area of north-eastern Tanganyika Territory.

RHINOLOPHUS GEOFFROYII cf R.G. ZAMBESIENSIS Andersen.

1904. *Rhinolophus augur zambesiensis* Andersen, *Ann. Mag. nat. Hist.* 14: 383, Nov. Fort Hill, North Nyasa District, northern Nyasaland [9° 30' S., 33° 16' E., ca 4,000 feet].

Records.—Luengera River; Kibongoto, Rombo; Pemba and Zanzibar Islands.

RHINOLOPHUS LOBATUS Peters.

1852. *Rhinolophus lobatus* Peters, *Reise Mossamb., Säugeth.*, p. 41, pl. 9; pl. 13, f. 16, 17. Sena, south bank of Zambesi River, Sena District, Portuguese East Africa [17° 28' S., 35° 1' E.] [*vide* Moreau, Hopkins and Hayman, 1946: 399].

Records.—Magroto; Morogoro; Kilosa; Marangu, Rombo; Unyang'anyi; Zanzibar Island.

RHINOLOPHUS ELOQUENS Andersen.

1905. *Rhinolophus Hildebrandti eloquens* Andersen, *Ann. Mag. nat. Hist.* 15: 74, Jan. Entebbe, north shore of Lake Victoria, Uganda Protectorate [0° 4' N., 32° 28' E. 3,863 feet].

Records.—Unyang'anyi; Pemba Island.

RHINOLOPHUS FUMIGATUS EXSUL Andersen.

1905. *Rhinolophus fumigatus exsul* Andersen, *Ann. Mag. nat. Hist.* 15: 74, Jan. Kitui, 3,500 feet, in Ukamba, Kitui District, Kenya Colony [1° 22' S., 38° 1' E.].

Record.—Mbanja.

RHINOLOPHUS HILDEBRANDTII HILDEBRANDTII Peters. Fluted Horseshoe Bat.

1878. *Rhinolophus Hildebrandtii* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1878: 195, pl. 1, f. 1, 1a. Ndi, east of Taita Hills, Taita District, Kenya Colony [3° 14' S., 38° 30' E., 1,900 feet].

Records.—Magroto; Mbanja; Kongwa; Mpwapwa.

RHINOLOPHUS sp.

Record.—Zanzibar Island [*vide* Moreau and Pakenham, 1941: 118, 124].

Family HIPPOSIDERIDAE Miller. Leaf-nosed Bats.

Genus HIPPOSIDEROS Gray.

1831. *Hipposideros* Gray, *Zool. Miscell.*, no. 1, p. 37, Feb. Genotype *Vespertilio speoris* Schreber.

HIPPOSIDEROS CAFFER CAFFER (Sundevall). **Lesser Leaf-nosed Bat.**

1846. *Rhinolophus caffer* Sundevall, *Ofvers. Vetensk.Akad. Förh., Stockh.* 3: 118. Near Durban, Natal, South Africa. [20° 50' S., 31° 1' E., sea-level].

1906. *Hipposiderus caffer*, Sund., *typicus* Andersen, *Ann. Mag. nat. Hist.* 17: 275, March.

Records.—Tanga, Usambara Mts. at Amani; Luengera River; Morogoro, Uluguru Mts. at Nyange; Kilosa, Mbala; Kilimanjaro; Mto wa Mbu; Mpwapwa; Umbugwe; Pemba and Zanzibar Islands.

HIPPOSIDEROS CAFFER CENTRALIS (Andersen).

1906. [*Hipposiderus*] *caffer centralis* Andersen, *Ann. Mag. nat. Hist.* 17: 275, 277, March. Entebbe, north shore of Lake Victoria, Uganda Protectorate [0° 4' N., 32° 28' E., 3,863 feet].

Record.—Range includes Tanganyika Territory (recorded from Dar es Salaam), where it coexists with *H.c. caffer* (Sundevall).

HIPPOSIDEROS COMMERSONI GIGAS (Wagner). **Giant Leaf-nosed Bat.**

1845. *Rhinolophus Gigas* Wagner, *Arch. Naturgesch.* 11 (1): 148. Benguela, Angola [12° 35' S., 13° 25' E., sea-level].

Record.—Mkulumuzi Caves.

HIPPOSIDEROS COMMERSONI MARUNGENSIS (Noack). **Greater Leaf-nosed Bat.**

1887. *Phyllorhina commersonii* Peters, var. *marungensis* Noack, *Zool. Jb.* 2: 272, pl. 10, f. 31-33, 7 May. Mpala's, in Marungu, west shore of Lake Tanganyika, Belgian Congo [6° 44' S., 29° 30' E., ca 2,900 feet].

Records.—Kilosa; Pemba and Zanzibar* Islands.

HIPPOSIDEROS RUBER (Noack). **Rufous Leaf-nosed Bat.**

1893. *Phyllorhina rubra* Noack, *Zool. Jb., Syst.* 7: 586, pl. 18, f. 14, 15, 23 Dec. Ngerengere River, Eastern Province, Tanganyika Territory.

Records.—Ngerengere River; Tendaguru; Manyoni; Ukerewe Island.

Genus TRIAENOPS Dobson.

1871. *Triaenops* Dobson, *J. Asiat. Soc. Beng.* 40 (2): 455, pl. 28, 29 Dec. Genotype, by monotypy, *Triaenops persicus* Dobson.

TRIAENOPS AFER Peters. **Trident Bat.**

1877. *Triaenops afer* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1876: 913, f. 2. Mombasa, east coast of Kenya Colony [4° 3' S., 39° 40' E., sea-level].

Records.—Mkulumuzi Caves; Mikindani.

Family VESPERTILIONIDAE Gray. **Simple-nosed Bats.****Subfamily VESPERTILIONINAE** Miller.**Genus MYOTIS** Kaup. **Mouse-eared Bats.**

1829. *Myotis* Kaup. *Skizz. Europ. Thierw.* 1: 106, 188. Genotype, by monotypy, *Vespertilio murinus* Schreber [nec Linnaeus] = *Vespertilio myotis* Borkhausen.

MYOTIS BOGAGII HILDEGARDEAE Thomas. **Rufous Mouse-eared Bat.**

1904. *Myotis Hildegardae* Thomas, *Ann. Mag. nat. Hist.* 13: 209, March. Fort Hall, 4,000 feet, north of Nairobi, central Kenya Colony [0° 42' S., 37° 40' E.].

Record.—Kasanga.

* Recorded by G. M. Allen (1908: 33) as *H. vittatus* (Peters, 1852, *Reise Mossamb., Säugeth.*, p. 32, pl. 6; pl. 13; f. 7-13; Ibo Island, Cape Delgado, east coast of Portuguese East Africa, 12° 20' S.). The measurements given by Allen come a little below Andersen's minima for *H. c. gigas* and a little above his maxima for *H. commersoni*—of which *marungensis* is the East African representative—as also do his measurements for *H. c. gigas* from the Mkulumuzi Caves, near Tanga. There would appear to be no hard and fast line between *H. c. marungensis* and *gigas*.

MYOTIS WELWITSCHII VENUSTUS (Matschie).

1899. *Vespertilio venustus* Matschie, *S.B. Ges. naturf. Fr. Berl.* 1899: 74. Kinole, north slopes of Uluguru Mts., Morogoro District, Tanganyika Territory.

Record.—Known only from the type-locality.

Genus PIPISTRELLUS Kaup. **Pipistrelles.**

1829. *Pipistrellus* Kaup, *Skizz. Europ. Thierw.* 1: 98. Genotype, by monotypy and tautonymy, *Vespertilio pipistrellus* Schreber.

Subgenus PIPISTRELLUS Kaup.

PIPISTRELLUS KUHLLII FUSCATUS Thomas.

1901. *Pipistrellus kuhllii fuscatus* Thomas, *Ann. Mag. nat. Hist.* 8: 34, July. Nainasha, Rift Valley, Kenya Colony [0° 43' S., 34° 25' E., 6,231 feet].

Record.—Bagiro.

PIPISTRELLUS NANUS NANUS (Peters). **Banana Bat.**

1852. *Vespertilio nanus* Peters, *Reise Mossamb., Säugeth.*, p. 63, pl. 16, f. 2. Inhambane, Portuguese East Africa [23° 51' S., 35° 34' E., sea-level].

Records.—Amani, Magroto, Mkulumuzi Caves; Bagamoyo; Dar es Salaam; Misalai; Bagiro, Mkingazi, Mkarazi, Nyange, Nyingwa; Kibongoto, Old Moshi; Mt. Meru at 3,000 metres; Kilosa; Karumo; Itale; Ugala River; Madehani; Kasanga, Kitungulu; Pemba and Zanzibar Islands.

PIPISTRELLUS PULCHER (Dobson).

1875. *Vesperugo pulcher* Dobson, *Proc. zool. Soc. Lond.* 1875: 471, Oct. Zanzibar Island.

Record.—Zanzibar Island.

Subgenus SCOTOZOUS Dobson.

1867. *Alobus* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1867: 707. As a subgenus of *Vespertilio* Linnaeus; genotype, by monotypy, *Vespertilio (Alobus) temminckii* Cretzschmar, 1826 [*nec* Horsfield, 1824]=*Vespertilio rüppellii* J. B. Fischer, 1829. Not *Alobus* Leconte, 1856, in Coleoptera (Melolonthidae).

1875. *Scotozous* Dobson, *Proc. zool. Soc. Lond.* 1875: 372, Oct. Genotype, by monotypy, *Scotozous dormeri* Dobson.

1946. *Vansonia* Roberts, *Ann. Transv. Mus.* 20: 304, 18 Oct. Genotype, by original designation, *Pipistrellus vernayi*=*Pipistrellus rüppellii vernayi* Roberts.

PIPISTRELLUS RÜPPELLII cf P.R. FUSCIPES Thomas. **Two-coloured Pipistrelle.**

1913. *Pipistrellus fuscipes* Thomas, *Ann. Mag. nat. Hist.* 11: 315, March. Sixty miles west of Entebbe, 3,700 feet, Uganda Protectorate.

Records.—Bagamoyo; Ukerewe Island; Kasanga.

Genus EPTESICUS Rafinesque. **Serotine Bats.**

1820. *Eptesicus* Rafinesque, *Annals of Nature* 1: 2. Genotype *Eptesicus melanops* Rafinesque=*Vespertilio fuscus* Beauvois.

EPTESICUS GRANDIDIERI (Dobson). **Brown Serotine Bat.**

1876. *Vesperugo (Vesperus) grandidieri* Dobson, *Ann. Mag. nat. Hist.* 18: 500, Dec. Zanzibar Island.

Record.—Zanzibar Island.

EPTESICUS PUSILLUS (Leconte). **Rusty-headed Serotine Bat.**

1857. *Vespertilio pusillus* Leconte, *Proc. Acad. nat. Sci. Philad.* 1857: 10. Probably Gaboon, West Africa.

Records.—Bagamoyo; Saranda; Kakoma.

EPITESICUS cf. E. TENUIPINNIS (Peters). White-winged Serotine Bat.

1872. *Vesperus tenuipinnis* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1872: 263, April. Kulu River, border of Gaboon and French Congo [*vide* Noack, 1889, *Zool. Jb., Syst.* 4: 218].

Record.—South shore of Lake Victoria at Nyegezi.

Genus NYCTICEIUS Rafinesque.

1819. *Nycticeius* Rafinesque, *J. Physiq.* 88: 417, June. Genotype *Nycticeius humeralis* Rafinesque.

Subgenus SCOTEINUS Dobson.

1875. *Scoteinus* Dobson, *Proc. zool. Soc. Lond.* 1875: 371, Oct. As a subgenus of *Scotophilus* Leach; type *Scotophilus emarginatus* (Dobson).

NYCTICEIUS SCHLIEFFENII cf. N.S. ALBIVENTER (Thomas and Wroughton).

1908. *Scoteinus schlieffeni albiventer* Thomas and Wroughton, *Proc. zool. Soc. Lond.* 1908: 540, 30 Oct. Naikhala, upper Egypt.

Records.—Sandawe; Saranda; Igonda.

Genus SCOTOPHILUS Leach. Brown Bats.

1821. *Scotophilus* Leach, *Trans. linn. Soc. Lond.* 13: 69, 71. Genotype, by original designation, *Scotophilus kuhlii* Leach. Not preoccupied by *Scotophila* Hübner, "1816" [=1821], in Lepidoptera.

SCOTOPHILUS BORBONICUS (E. Geoffroy).

1806. *Vesp[ertilio] borbonicus* E. Geoffroy, *Ann. Mus. Hist. nat. Paris* 8: 201, pl. 46. Mauritius [20° S., 57° 30' E.].

Record.—Matschie (1895: 24) recorded this species from Zanzibar Island, but the opposite mainland, known as the "Zanzibar Coast," was probably intended.

SCOTOPHILUS NIGRITUS cf. S. N. COLIAS Thomas.

1904. *Scotophilus nigrata colias* Thomas, *Ann. Mag. nat. Hist.* 13: 207, March. Fort Hall, north of Nairobi, central Kenya Colony [0° 42' S., 37° 40' E., 4,000 feet].

Records.—Dar es Salaam*; Lyamungu; Zanzibar Island.

SCOTOPHILUS VIRIDIS VIRIDIS (Peters). **Lesser Yellow Bat.**

1852. *Nycticejus viridis* Peters, *Reise Mossamb., Säugeth.*, p. 67, pl. 17, f. 2 a-e. Mozambique Island, off east coast of Portuguese East Africa [15° S., 40° 42' E., sea-level].

Record.—Morogoro.

Genus GLAUCONYCTERIS Dobson. Butterfly Bats.

1875. *Glauconycteris* Dobson, *Proc. zool. Soc. Lond.* 1875: 383, Oct. As a subgenus of *Chalinolobus* Peters; genotype, by subsequent designation (Miller, 1907, *Bull. U. S. nat. Mus.* 57: 221), *Kerivoula poensis* Gray.

GLAUCONYCTERIS ARGENTATUS (Dobson).

1875. *Chalinolobus argentatus* Dobson, *Proc. zool. Soc. Lond.* 1875: 385, Oct. Cameroon Mountain, British (Mandated) Cameroons [4° 10' N., 9° 10' E.].

Records.—Morogoro; Kilosa; Mwaya.

GLAUCONYCTERIS VARIEGATUS cf. G. V. PAPILIO Thomas.

1905. *Glauconycteris papilio* Thomas, *Ann. Mag. nat. Hist.* 15: 77, Jan. Entebbe, north shore of Lake Victoria, Uganda Protectorate [0° 4' N., 32° 28' E., 3,863 feet].

Record.—Kilosa.

* Recorded by Loveridge (1922: 47) as *S. n. dinganii* (A. Smith, 1833, *S. Afr. quart. J.* 2: 59, Nov.; between Natal and Delagoa Bay). Geographically, however, we consider that this is incorrect and we prefer to refer this specimen provisionally to the more northerly race, *S. n. colias* Thomas.

Subfamily MINIOPTERINAE Miller. **Long-winged Bats.**

Genus MINIOPTERUS Bonaparte.

1837. *Miniopterus* Bonaparte, *Iconogr. Fauna Ital.* 1: fasc 20 (under *Vespertilio emarginatus*). As a subgenus of *Vespertilio* Linnaeus; genotype *Vespertilio ursinii* Bonaparte=*V. schreibersii* Kuhl.

MINIOPTERUS MINOR Peters.

1867. *Miniopterus minor* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1866: 885. "Zanzibar Coast," i.e. mainland of East Africa opposite Zanzibar Island.

Record.—Mkulumuzi Caves.

MINIOPTERUS NATALENSIS ARENARIUS Heller. **Natal Clinging Bat.**

1912. *Miniopterus natalensis arenarius* Heller, *Smithson. misc. Coll.* 60 (12): 2, 4 Nov. Nanyuki River, north-west of Mt. Kenya, Kenya Colony [ca 0° 10' N., 37° E.].

Record.—Uluguru Mts. at Bagiro.

MINIOPTERUS cf M. SCOTINUS (Sundevall).

1846. *Vesperugo scotinus* Sundevall, *Ofvers. VetenskAkad. Förh., Stockh.* 3: 119. Various places in Natal, of which the late Dr. Austin Roberts has nominated (*in litt.*) Durban, Natal [29° 50' S., 31° E., sea-level], as type-locality.

Record.—"Zanzibar Coast," i.e. the mainland of East Africa opposite Zanzibar Island.

Subfamily KERIVOULINAE Miller. **Painted Bats.**Genus KERIVOULA Gray. **Forest Bats.**

1842. *Kerivoula* Gray, *Ann. Mag. nat. Hist.* 10: 258, Dec. Genotype *Vespertilio hardwickii* Horsfield.

KERIVOULA AFRICANA Dobson. **Dwarf Forest Bat.**

1878. *Kerivoula africana* Dobson, *Cat. Chiropt. Coll. Brit. Mus.*, p. 335. "Zanzibar Coast," i.e. the mainland of East Africa opposite Zanzibar Island.

Records.—Morogoro; coastal north-east Tanganyika Territory.

Family MOLOSSIDAE Gill. **Free-tailed Bats.**

Genus TADARIDA Rafinesque.

1814. *Tadarida* Rafinesque, *Précis Découv. Trav. som.*, p. 55. Genotype, by original designation, *Cephalotes teniotis* Rafinesque.

1818. *Nyctinomus* E. Geoffroy, *Descr. Egypte* 2: 114. Genotype, by monotypy, *Nyctinomus aegyptiacus* E. Geoffroy.

Subgenus TADARIDA Rafinesque.

TADARIDA ANSORGEI (Thomas).

1913. *Nyctinomus ansorgei* Thomas, *Ann. Mag. nat. Hist.* 11: 318, March. Malange (Malanje), 1,150 metres, northern Angola [9° 35' S., 16° 20' E.].

Record.—Lyamungu.

TADARIDA CISTURUS (Thomas).

1903. *Nyctinomus cisturus* Thomas, *Ann. Mag. nat. Hist.* 12: 502, Nov. Mongala, 25 miles north of Gondokoro, Anglo-Egyptian Sudan.

Record.—Weruweru River.

TADARIDA FULMINANS (Thomas).

1903. *Nyctinomus fulminans* Thomas, *Ann. Mag. nat. Hist.* 12: 501, Nov. Fianarantsoa, eastern Betsileo, Madagascar.

Record.—Weruweru River.

Subgenus MOPS Lesson.

1842. *Mops* Lesson, *Nouv. Tabl. Règne Anim., Mammif.*, p. 18. Genotype, by original designation, *Mops indicus* Lesson = *Dysopes mops* F. Cuvier.

1917. *Allomops* J. A. Allen, *Bull. Amer. Mus. nat. Hist.* 37: 470, 29 Sept. As a subgenus of *Mops* Lesson; type, by original designation, *Chaerephon (Allomops) osborni* J. A. Allen.

TADARIDA BRACHYPTERA (Peters.) **White-breasted Free-tailed Bat.**

1852. *Dysopes brachypterus* Peters, *Reise Mossamb., Südeuth.*, p. 59, pl. 15, f. 1. Mozambique Island, off the east coast of Portuguese East Africa [15° S., 40° 42' E., sea-level].

Records.—Bagamoyo; Zanzibar Island.

TADARIDA ANGOLENSIS* ORIENTIS (G. M. Allen and Loveridge). **Angola Free-tailed Bat.**

1942. *Mops angolensis orientis* G. M. Allen and Loveridge, *Bull. Mus. comp. Zool. Harv.* 89: 166, Feb. Kitaya, north bank of Rovuma River, south of Mikindani, south-eastern Tanganyika Territory.

Record.—Known only from the type-locality.

TADARIDA ANGOLENSIS OSBORNI (J. A. Allen).

1917. *Chaerephon (Allomops) osborni* J. A. Allen, *Bull. Amer. Mus. nat. Hist.* 37: 470, text-f. 12-15, 29 Sept. Kinshasa, left bank of Congo River, near Leopoldville, Middle Congo District, Belgian Congo.

Records.—Itale; Kigoma, Ujiji; Mwaya.

Subgenus CHAEREAPHON Dobson.

1874. *Choerephon* Dobson, *J. Asiatic Soc. Beng.* 43 (2): 144. As a subgenus of *Nyctinomus* E. Geoffroy; type *Nyctinomus johorensis* Dobson. This spelling of the generic name is technically incorrect.

1878. *Chaerephon* Dobson, *Cat. Chiropt. Coll. Brit. Mus.*, p. 431. Spelling of generic name corrected.

TADARIDA BIVITTATA (Heuglin). **Brown Free-tailed Bat.**

1861. *Nyctinomus bivittatus* Heuglin, *Nova Acta Leop. Carol.* 29 (8): 4, 13. Keren, Eritrea [15° 48' N., 38° 27' E.].

Records.—Bagamoyo; Igonda.

TADARIDA LIMBATA (Peters). **White-bellied Free-tailed Bat.**

1852. *Dysopes limbatus* Peters, *Reise Mossamb., Südeuth.*, p. 56, pl. 14. Mozambique Island, off east coast of Portuguese East Africa [15° S., 40° 42' E., sea-level].

Records.—Coastal north-east Tanganyika Territory; Bagamoyo; Kitaya; Kilosa; Kilimatinde; Ungwa River; Pemba and Zanzibar Islands.

TADARIDA MAJOR (Trouessart). **Greater Free-tailed Bat.**

1897. *Nyctinomus pumilus* var. *major* Trouessart, *Cat. Mamm. Viv. Foss.*, ed. 1, pt. 1, p. 146. First cataract of the Nile, Anglo-Egyptian Sudan.

Records.—Dar es Salaam; Zagayu; Usambiro.

TADARIDA PUMILA cf. T. P. NAIVASHAE (Hollister). **Lesser Free-tailed Bat.**

1916. *Chaerephon pumilus naivashae* Hollister, *Smithson. misc. Coll.* 66 (1): 4, 10 Feb. Naivasha Station, Rift Valley. Kenya Colony [0° 43' S., 36° 25' E., 6,231 feet].

Records.—Bagamoyo; Weruweru River; Usambiro; Pemba Island.

* Roberts (1944: 238) has suggested that *Nyctinomus condylurus* A. Smith (1833, *S. Afr. quart. J.* 2: 54, Nov.; Durban, Natal) is an earlier name for what is commonly known as *Tadarida angolensis* (Peters, 1870, *J. Sci. math. phys. nat., Lisboa* 3: 124, Dec.; Cuanza River, Angola).

Subgenus OTOMOPS Thomas.

1913. *Otomops* Thomas, *J. Bombay nat. Hist. Soc.* 22: 91, 21 April. Genotype, by original designation, *Nyctinomus wroughtoni* Thomas.

TADARIDA MARTIENSSENI (Matschie).

1897. *Nyctinomus martiensseni* Matschie, *Arch. Naturgesch.* 63 (1): 84, Oct. Magroto Plantation, south-east Usambara Mts., west of Tanga, north-eastern Tanganyika Territory.

Record.—Magroto.

Order PRIMATES Linnaeus.

Lemurs, Monkeys, Apes, Man.

Suborder PROSIMII Illiger.

Family LORISIDAE Gregory. Galagos, Slow Lemurs.

Genus GALAGO E. Geoffroy. Galagos, Bush-“babies”.

1796. *Galago* E. Geoffroy, *Mag. encycl.* 1796 (1): 49, pl. Genotype, by monotypy, *Galago senegalensis* E. Geoffroy.

Kiswahili: *komba*.

GALAGO CRASSICAUDATUS CRASSICAUDATUS E. Geoffroy. Greater Galago.

1812. *Galago crassicaudatus* E. Geoffroy, *Ann. Mus. Hist. nat. Paris* 19: 166, Oct. Quelimane, Porto Belo District, east coast of Portuguese East Africa [17° 52' S., 36° 52' E., sea level] [fixed by Thomas, 1917, *Ann. Mag. nat. Hist.* 20: 48, July].

Records.—Rufiji River; south-west Uluguru Mts.; Mahenge, Sanje; Lutamba Lake, Mitwero, Mitotoni; Mikindani; Iringa; Ugala River; Upangwa; Maguru, west of Mbarangandu River on the Liwale-Songea road, Mpitumbi, Songea; Rutengani, Mwarawira's; Rukwa Valley; Mizizikaunga, Njila, Shoga; Ugala River, Wala River; Kalambo Falls, Mambwe, Zimba.

GALAGO CRASSICAUDATUS AGISYMBANUS (Coquerel). Zanzibar Greater Galago.

1859. *Otolenur agisymbanus* Coquerel, *Rev. Mag. Zool.* 11: 459, pl. 17; pl. 18, f. 1a, 1b, Nov. Zanzibar Island [fide Moreau, Hopkins and Hayman, 1946: 401].

Records.—Pemba and Zanzibar Islands.

GALAGO CRASSICAUDATUS ARGENTATUS Lönnberg.

1913. *Galago argentatus* Lönnberg, *Ann. Mag. nat. Hist.* 11: 167, Jan. Bukine, east of Lake Victoria, Musoma District, Tanganyika Territory.

Records.—Bukine, Karusenyi; Mwanza, Ukerewe Island.

GALAGO CRASSICAUDATUS LASIOTIS Peters.

1876. *Galago lasiotis* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1876: 912, text-f. 1. Mombasa, Mombasa District, east coast of Kenya Colony [4° 3' S., 39° 40' E., sea level].

Records.—Amboni, Mkulumuzi Caves, Tanga.

GALAGO CRASSICAUDATUS PANGANIENSIS (Matschie).

1905. *Otolenur panganiensis* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1905: 278, Dec. Arusha Chini, south of Kilimanjaro, Moshi District Tanganyika Territory.

Records.—Usambara Mts. at Magamba; middle Ruvu (or Pangani) River, Same; Arusha Chini, Kahe, Kibongoto, Kilimanjaro, Lyamungu; Arusha, Mt. Meru up to 3,500 metres; southern Masailand; Umbugwe; Kisese, Kondoa, Kwa Mtoro; Chanzuru, Ilonga, Mkata River; Mkarazi, Morogoro, Wami River; Dar es Salaam; Mafia Island.

GALAGO DEMIDOVII ORINUS Lawrence and Washburn. **Least Bush-baby.**

1936. *Galago demidovii orinus* Lawrence and Washburn, *Occ. Pap. Boston Soc. nat. Hist.* 8: 259, 8 Jan. Bagiro, 5,000 feet, north slopes of Uluguru Mts., Morogoro District, Tanganyika Territory.

Record.—Known only from the type-locality.

GALAGO SENEGALENSIS ALBIPES Dollman. **Kavirondo Bush-baby.**

1909. *Galago braccatus albipes* Dollman, *Ann. Mag. nat. Hist.* 4: 549, Dec. Twere (Kirui's), 6,000 feet, south slopes of Mt. Elgon, North Kavirondo District, Kenya Colony [ca 0° 46' N., 34° 37' E.].

Records.—Mwanza; thirty miles south of Tabora.

GALAGO SENEGALENSIS BRACCATUS Elliot.

1907. *Galago braccatus* Elliot, *Ann. Mag. nat. Hist.* 20: 187, Sept. Tsavo River, near Kilimanjaro, Kenya Colony [3° 5' S., between 37° 40' and 38° 30' E.].

Records.—Genda Genda; Masimani; Old Moshi.

GALAGO SENEGALENSIS MOHOLI A. Smith. **Moholi Bush-baby.**

1836. *Galago Moholi* A. Smith, *Rpt Exp. C. Afr.*, p. 42, June. Head-waters of the Limpopo River near its junction with the Marico River, about 25° S., Bechuanaland.

Records.—Liwale; Nchingidi; Kondoa; Dodoma, Kisigo River; Mkalama, Ushora; Saranda; Uhehe; Madehani, Manda; Mlembwe River; Liwale-Songea road west of Mbarangandu River; Peramiho; Rungwe Mt.; Sanga, Zagayu; Kalole, Ugunda, Uyui; two days' march north of Gombe River; 16 miles south of Kasulu, Ruchugi River; Usevia, Mambwe, Mwimbi.

GALAGO SENEGALENSIS ZANZIBARICUS Matschie. **Zanzibar Bush-baby.**

1893. *Galago zanzibaricus* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1893: 111. Jembiani, Zanzibar Island [fide Neumann, 1900: 535; Schwarz, 1931: 55].

Records.—Amani, Amboni, Magroto, Upale; Kiserawe; Bagiro; Rufiji River; Zanzibar Island.

Suborder **ANTHROPOIDEA** Mivart.

Family **CERCOPITHECIDAE** Gray.

Subfamily **CERCOPITHECINAE** Blandford. **Monkeys, Baboons.**

Genus **CERCOCEBUS** E. Geoffroy. **Mangabeys.**

1812. *Cercocebus* E. Geoffroy, *Ann. Mus. Hist. nat. Paris* 19: 97, Oct. Genotype *Cercocebus fuliginosus* E. Geoffroy = *Simia atys* Audebert.

CERCOCEBUS ALBIGENA JOHNSTONI (Lydekker). **Black Mangabey.**

1900. [*Sennocebus*] *albigena johnstoni* Lydekker, *Novit. Zool.* 7: 595, 29 Dec. Probably from the Ituri or Semliki Forests, north-eastern Belgian Congo.

Record.—Kakindu.

Genus **PAPIO** Brisson. **Mandrills, Baboons.**

1762. *Papio* Brisson, *Regn. Anim.*, ed. 2, p. 136. Genotype, by monotypy, *Papio papio* Brisson = *Simia sphinx* Linnaeus.

1773. *Papio* P. L. S. Müller, *Ritters Linné vollst. Natursyst.* 1: 118, 119, 121; 1776, *op. cit.*, *Suppl.-Bd.*, p. 6, *Register-Bd.*, p. 447. Genotype *Simia sphinx* Müller = *Simia sphinx* Linnaeus [fide Hopwood, 1947: 533].

Subgenus **CHOEROPITHECUS** Blainville. **Baboons.**

1777. *Papio* Erxleben, *Syst. Regn. Anim.*, pp. xxx, 15. Genotype, by subsequent designation (Palmer, 1904, *Index Gen. Mamm.*, p. 511), *Papio sphinx* Erxleben (*nec* Linnaeus) = *Simia cynocephalus* Linnaeus. Not *Papio* Brisson, 1762, *supra cit.*

1795. *Cynocephalus* E. Geoffroy and G. Cuvier, *Mag. encycl.* 1795 (3): 462. Genotype, by tautonymy, *Simia cynocephalus* Linnaeus. Not *Cynocephalus* Schaeffer, 1760, in Pisces; not *Cynocephalus* Boddaert, 1768, in Mammalia (Galeopithecidae); not *Cynocephalus* Walbaum, 1792, in Pisces.

1839. *Chocropithecus* Blainville, *Osteogr. Mammif.* 1: Pithecus, pp. 39, 47, 14 June. Genotype, by subsequent designation (J. A. Allen, 1925: 307-308), *Simia cynocephalus* Linnaeus.

1839. *Chaeropithecus* Gervais (ex Blainville, orally), *Dict. pittoresque Hist. nat.* 8: 90. As a subgenus of *Simia* Linnaeus; type *Simia cynocephalus* Linnaeus.

Kiswahili: *nyani*.

PAPIO ANUBIS* NEUMANNI Matschie. **Neumann's Olive Baboon.**

1897. *Papio neumanni* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1897: 161. Ol Doinyo Lengai, south of Lake Natron, Rift Valley, northern Tanganyika Territory. *Records*.—Generally distributed in suitable localities in Lushoto, Moshi, Arusha, Masai (east of the Rift Wall), Mbulu (east of the Rift Wall), Kondoa, Dodoma and Singida Districts.

PAPIO ANUBIS cf P. A. TESSELLATUS (Elliot).† **Ankole Olive Baboon.**

1909. *Papio tessellatum* Elliot, *Ann. Mag. nat. Hist.* 4: 247, Sept. Mulema, north-east of Chitanda Hill, Ankole District, south-west Uganda Protectorate [0° 58' S., 30° 58' E., 5,000 feet].

Records.—Banagi, Ikoma; Mwanza, Ukerewe Island; Handajega, Zagayu; Ushiroombo; Kasulu, Makere; Luiche Scarp.

PAPIO CYNOCEPHALUS CYNOCEPHALUS (Linnaeus). **Yellow Baboon.**

1766. *Simia Cynocephalus* Linnaeus, *Syst. Nat.*, ed. 12, 1: 38. Inland from Mombasa, Kenya Colony.

1893. *Papio thoti ibeanus* Thomas, *Ann. Mag. nat. Hist.* 11: 47, Jan. Lamu, east coast of Kenya Colony [2° 16' S., 40° 54' E., sea-level].

Records.—Widespread in suitable localities in Tanga, Handeni, Same, Moshi, Uzaramo, Rufiji, Morogoro, Kilosa, Ulanga, Kilwa, Liwale, Lindi, Mikindani, Newala, Masasi, Tunduru, Songea, Kondoa, Mpwapwa, Dodoma, Singida, Mwanza, Kwimba, Iringa, Chunya, Mbeya and Rungwe Districts; Kibwesa.

Genus CERCOPITHECUS Linnaeus. **Guenons.**

1758. *Cercopithecus* Linnaeus, *Syst. Nat.*, ed. 10, 1: 26. As a subgroup [=subgenus in the modern sense] of *Simia* Linnaeus; type, by subsequent designation (Stiles and Orleman, 1926, *J. Mammal.* 7: 48, 15 Feb.), *Simia diana* Linnaeus. Adopted as the correct name (in the singular form, *Cercopithecus*), author and genotype for the guenons [vide *Opin. int. Comm. zool. Nom.*, no. 104, in *Smithson misc. Coll.* 73 (5): 25, 19 Sept., 1928].

Aethiops group. **Black-faced Vervets, Grivets, Green Monkeys.**

Kiswahili: *tumbili, ngedere*.

CERCOPITHECUS AETHIOPS CENTRALIS Neumann. **Bukoba Green Monkey.**

1900. *Cercopithecus centralis* Neumann, *Zool. Jb.*, *Syst.* 13: 533, 10 Oct. Bukoba, west shore of Lake Victoria, Tanganyika Territory.

Records.—Generally distributed in suitable localities in Bukoba, Musoma, Mwanza, Maswa, Buha, Kigoma, Tabora and Chunya Districts.

* G. M. Allen (1939: 161) has recommended that *P. anubis* (J. B. Fischer, 1829, *Synop. Mammal.*, p. 33; upper Nile) should be dropped in favour of *P. doguera* (Pucheran, 1856, *Rev. Mag. Zool.* 8: 96, Feb.; 1857, *op. cit.* 9: 250, June; Abyssinia) on the grounds that J. A. Allen (1925: 315) considered the former to be "absolutely indeterminable." It appears to us that *P. anubis* is a valid name as it was based on a full description and good coloured plate of the "Anubis" in Geoffroy and Cuvier's *Histoire naturelle des Mammifères* (vol. 3, livr. 50, June, 1825).

† Doubtfully separable from *P. a. anubis* (J. B. Fischer), of the upper Nile.

CERCOPITHECUS AETHIOPS JOHNSTONI Pocock. Kilimanjaro Green Monkey.

1885. *Cercopithecus pygerythrus* Johnston, *Proc. zool. Soc. Lond.* 1885: 216, 1 Aug. Misprint of *C. pygerythrus* (F. Cuvier).

1907. [*Cercopithecus pygerythrus*] *johnstoni* Pocock, *Proc. zool. Soc. Lond.* 1907: 738, 8 Oct. Old Moshi, 5,000 feet, south slopes of Kilimanjaro, northern Tanganyika Territory.

Records.—Common in suitable localities in Tanga, Lushoto, Pare, Moshi, Arusha, Masai, Mbulu, Morogoro, Kilosa, Mpwapwa, Dodoma, Kondoa, Manyoni, Singida, Iringa, Kilwa, Liwale, Lindi, Mikindani, Newala, Masasi, Tunduru and Songea Districts.

CERCOPITHECUS AETHIOPS NESIOTES Schwarz. Pemba Green Monkey.

1926. *Cercopithecus aethiops nesiotes* Schwarz, *Z. Säugetierk.* 1: 42, 31 Aug. Chake Chake, Pemba Island.

Record.—Endemic on Pemba Island.

Mitis group. Blue or Sykes's Monkeys.

Kiswahili: *kima*.

CERCOPITHECUS MITIS ALBOGULARIS (Sykes). Sykes's Blue Monkey.

1831. *Semnopithecus*? *albugularis* Sykes, *Proc. zool. Soc. Lond.* 1830-1831: 106, 5 Aug. Zanzibar Island [*vide* Schwarz, 1927, *Ann. Mag. nat. Hist.* 19: 152, Jan.].

Records.—Mafia, Tumbatu and Zanzibar Islands.

CERCOPITHECUS MITIS DOGGETTI Pocock. Ankole Blue Monkey.

1907. [*Cercopithecus leucampyx*] *doggetti* Pocock, *Proc. zool. Soc. Lond.* 1907: 691, 9 Oct. Between Lake Karonge and Burumba, north of the Kagera River, Ankole District, Uganda Protectorate [5,000 feet] [*vide* Moreau, Hopkins and Hayman, 1946: 402].

Records.—Kabale, Misenyi.

CERCOPITHECUS MITIS KIBONOTENSIS Lönnberg. Kilimanjaro Blue Monkey.

1908. *Cercopithecus albugularis kibonotensis* Lönnberg, *Wiss. Ergebn. schwed. zool. Exped. Kilimanjaro* 2: *Mamm.*, p. 3. Kibongoto, south-west foothills of Kilimanjaro, northern Tanganyika Territory.

Records.—Kilimanjaro and Mt. Meru and the rivers flowing off them; Usa; Gonja, Pare Mts.; Same; Usambara Mts.; Magroto Hill; Mkulumuzi River; coastal forest near Tanga and Pangani.

CERCOPITHECUS MITIS MOLONEYI P. L. Sclater. Lake Nyasa Blue Monkey.

1893. *Cercopithecus moloneyi* P. L. Sclater, *Proc. zool. Soc. Lond.* 1893: 252, pl. 17, Aug. Karonga, north-west shore of Lake Nyasa, northern Nyasaland [9° 56' S., 33° 56' E., 1,600 feet].

Records.—South-western Tanganyika; forested areas on the Uzungwa and Livingstone Mts.; the Nkuka Forest on Rungwe Mt.; forest on the northern slopes of Mbeya Mt.; Ufipa.

CERCOPITHECUS MITIS MONOIDES I. Geoffroy, Rufiji Blue Monkey.

1841. [*Cercopithecus*] *monoides* I. Geoffroy, *Arch. Mus. Hist. nat. Paris* 2: 558, pl. 31. Rufiji River at 8° S., eastern Tanganyika Territory [*vide* Schwarz, 1928a: 656].

Records.—Forested areas in Kilosa, Mpwapwa, Morogoro, Rufiji, Kilwa, Lindi and Mikindani Districts; Mahura.

CERCOPITHECUS MITIS NEUMANNI Matschie*. Kavirondo Blue Monkey.

1905. *Cercopithecus neumanni* Matschie *S. B. Ges. naturf. Fr. Berl.* 1905: 266. Sidho (Kitoto's), Nyando Valley, central Kavirondo District, Kenya Colony [0° 7' S., 35° 7' E.].

Records.—Rift Wall at Mto wa Mbu; upper Mara River.

* Doubtfully separable from *C. m. stuhlmanni* Matschie [1893, *S. B. Ges. naturf. Fr. Berl.* 1893: 225], from north of Kinyawanga, near Beni, Semliki Valley, eastern Belgian Congo.

Nictitans group. "Putty"-nosed Monkeys.

CERCOPITHECUS NICITANS SCHMIDT Matschie. **Uganda Putty-nosed Monkey.**

1892. *Cercopithecus Schmidtii* Matschie, *Zool. Anz.* 15: 161, 2 May. Between Mengo (Kampala) and Murchison Bay, Uganda Protectorate [*vide* Moreau, Hopkins and Hayman, 1946: 403].

Records.—Misenyi; west of Kasulu.

Genus ERYTHROCEBUS Trouessart. **Red Monkeys.**

1897. *Erythrocebus Trouessart*, *Cat. Mammif. Viv. Foss.*, n. ed., 1: 19. As a subgenus of *Cercopithecus* Linnaeus; genotype, by subsequent designation (G. M. Allen, 1939: 153), *Simia patas* Schreber.

ERYTHROCEBUS PATAS BAUMSTARKI Matschie. **Ikoma Patas Monkey.**

1905. *Erythrocebus baumstarki* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1905: 273. Ikoma, Musotua District, Tanganyika Territory.

Records.—Engare Nairobi; Kisongo; between Banagi and Ikoma; Handajega.

Subfamily COLOBINAE Elliot. Leaf-eating Monkeys.

Genus COLOBUS Illiger. **Colobus or Guerezas.**

1811. *Colobus* Illiger, *Prod. Syst. Mamm. Av.*, p. 69. Genotype, by subsequent designation (I. Geoffroy, 1851, *Cat. méth. Coll. Mammif. Mus. Hist. nat. Paris*, p. 17), *Colobus polycomos* (Schreber) = *Cebus polykomos* Zimmermann.

Subgenus COLOBUS Illiger. **Black-and-white Colobus.**

Kiswahili: *mbega*

COLOBUS ABYSSINICUS CAUDATUS Thomas. **Kilimanjaro Black-and-white Colobus.**

1885. *Colobus guereza caudatus* Thomas, *Proc. zool. Soc. Lond.* 1885: 219, pl. 12, 1 Aug. Usuri, 3,000 feet, eastern foothills of Kilimanjaro, northern Tanganyika Territory.

Records.—Forests on and near Kilimanjaro and Mt. Meru.

COLOBUS ABYSSINICUS MATSCHIEI Neumann. **Neumann's Black-and-white Colobus.**

1899. *Colobus matschiei* Neumann, *S. B. Ges. naturf. Fr. Berl.* 1899: 15. Sidho (Kitoto's), Nyando Valley, Central Kavirondo District, Kenya Colony [0° 7' S., 35° 7' E.].

Records.—Junction of Orangi and Grumeti Rivers, east end of Speke Gulf; Nasa.

COLOBUS ANGOLENSIS ADOLFI-FRIEDERICI Matschie. **Kivu Black-and-white Colobus.**

1914. *Colobus adolfi-friederici* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1914: 337, July. Rugege Forest, north-east of Lake Kivu, Belgian (Mandated) Ruanda.

Record.—Minziro Forest.

COLOBUS ANGOLENSIS PALLIATUS Peters. **Pangani Black-and-white Colobus.**

1868. *Colobus palliatus* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1868: 637. Lower reaches of the Ruvu (or Pangani) River, north-eastern Tanganyika Territory.

Records.—Amani, Amboni, Ndarema, Sigi River; Pangani, lower Ruvu (or Pangani) River; Usambara Mts. at Kizerui, Lutindi Hill, Magamba, Misalai, middle Umba River; near Dar es Salaam, Uzaramo; Uluguru Mts. at Bagiro, Nyange, Nyingwa, Vituri; Mafwemera Mts.

COLOBUS ANGOLENSIS SHARPEI Thomas. **Nyasa Black-and-white Colobus.**

1902. *Colobus sharpei* Thomas, *Proc. zool. Soc. Lond.* 1902 (1): 118, 1 June. Fort Hill, North Nyasa District, northern Nyasaland [9° 43' S., 33° 16' E., ca 4,000 feet].

Records.—Forested areas in south-western Tanganyika; Iringa, possibly Dabaga; Livingstone Mts. in the Fungwe Forest; Ngozi Crater on the Poroto Mts., Nkuka Forest on Mt. Rungwe.

Subgenus *PROCOLOBUS* Rochebrune. **Red Colobus.**

1886-87. *Procolobus* Rochebrune, *Faune Sénégalaise*, Suppl. 1: 95, 97, pl. 1. Genotype, by monotypy, *Colobus rufomitratus* Peters.

COLOBUS BADIUS GORDONORIUM (Matschie). **Uhehe Red Colobus.**

1900. *Piliocolobus gordonorum* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1900: 186. Uzungwa Mts., Iringa District, Tanganyika Territory.
Records.—Dabaga, Uzungwa Mts.

COLOBUS BADIUS KIRKII Gray. **Kirk's Red Colobus.**

1868. *Colobus kirkii* Gray. *Proc. zool. Soc. Lond.* 1868: 180, pl. 15 [trivial name here spelt "kirkii"], May. Zanzibar Island.

Record.—Endemic on Zanzibar Island.

COLOBUS BADIUS TEPHROSCELES Elliot. **Ruwenzori Red Colobus.**

1907. *Colobus tephrosceles* Elliot, *Ann. Mag. nat. Hist.* 20: 195, Sept. Ruahara River, 4,000 feet, east slopes of Mt. Ruwenzori, Toro District, Uganda Protectorate.

1914. *Tropocolobus gudoviusi* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1914: 340, July. South-southeast of Lake Burigi, between Rusubi and Ihangiro, west of Lake Victoria, Tanganyika Territory.

Records.—Near Lake Burigi; Biharamulo, Nyakakiri, Nyarambuga River, Ruiga River; Moyowosi River; Mahari Mts., Niamanzi River.

Family PONGIDAE Elliot. **Apes.**Genus *PAN* Oken*. **Chimpanzees.**

1816. *Pan* Oken, *Lehrb. Naturgesch.* 3 (2): xi, 1230. Genotype *Pan africanus* Oken=*Simia troglodytes* Blumenbach. (See *Opin. int. Comm. zool. Nom.*, no. 114, in *Smithson misc. Coll.* 73 (6): 25, 8 June, 1929.)

Kiswahili: *soko mtu*.

PAN TROGLODYTES SCHWEINFURTHII (Giglioli). **Long-haired Chimpanzee.**

1872. *Troglodytes Schweinfurthii* Giglioli, *Ann. Mus. Stor. nat. Genova* 3: 114, footnote, 135. Upper Uele River drainage, Niam-niam country, north-east Belgian Congo.

Records.—East of Lake Tanganyika from the Urundi border in the north southwards to the Mahari Mts. and Ubende; hills north-east of Lugufu, and on Mt. Kapalagulu; upper Kampisa Valley, Kibwesa, Kungwe Mt., Lugala Hills, Lunguma Mt.

Family HOMINIDAE Gray. **Man.**Genus *HOMO* Linnaeus.

1758. *Homo* Linnaeus, *Syst. Nat.*, ed. 10, 1: 20. Genotype *Homo sapiens* Linnaeus.

Kiswahili: *binadamu*.

HOMO SAPIENS Linnaeus. **Modern Man.**

1758. *Homo Sapiens* Linnaeus, *Syst. Nat.*, ed. 10, 1: 20. Sweden.

Range.—Ubiquitous in suitable localities.

Order PHOLIDOTA Weber.

Family MANIDAE Gray.

Genus *MANIS* Linnaeus. **Pangolins, Scaly Ant-eaters.**

1758. *Manis* Linnaeus, *Syst. Nat.*, ed. 10, 1: 36; 1766, *op. cit.*, ed. 12, 1: 52. Genotype, by monotypy, *Manis pentadactyla* Linnaeus.

* Replaces the more familiar *Anthropopithecus* Blainville (1838, *Ann. franc. etrang. Anat. Physiol., Paris* 2: 360. Genotype *Anthropopithecus troglodytes* = *Simia troglodytes* Blumenbach), which has been rejected [vide *Opin. int. Comm. zool. Nom.*, no. 90].

Subgenus SMUTSIA Gray. **Ground Pangolins.**

1865. *Smutsia* Gray, *Proc. zool. Soc. Lond.* 1865: 360, 369, Oct. Type, by original designation, *Manis temminckii* Smuts.

Kiswahili: *kakakuona*.

MANIS TEMMINCKII Smuts. **Temminck's Ground Pangolin.**

1832. *Manis Temminckii* Smuts, *Enumerat. Mammal. Cap.*, p. 54, pl. 3, f. 6, 7. "Cape of Good Hope, from beyond Litakun"*.
Records.—Widely, but apparently sparsely, distributed. Bagamoyo, Mandera; Morogoro; Dodoma; Manyoni, Wahumba; Serengeti; Banagi; Shinyanga; Tabora; Chunya, Kwimba, Luika, Lupa Plateau, Njila, Patamera; Mukalizi.

Order LAGOMORPHA Brandt. **Hares, Rabbits.**

Family LEPORIDAE Gray.

Subfamily PALAEOLAGINAE Dice.

Genus PRONOLAGUS Lyon. **Rock "Hares."**

1904. *Pronolagus* Lyon, *Smithson. misc. Coll.* 45: 386, 416, 15 June. Genotype, by original designation, *Pronolagus crassicaudatus* Lyon (not *Lepus crassicaudatus* I. Geoffroy)—*P. ruddi* Thomas and Schwann [*vide* Lyon, 1906, *Proc. biol. Soc. Wash.* 19: 95, 4 June].

Kiswahili: *kitungule*.

PRONOLAGUS CRASSICAUDATUS (I. Geoffroy).

1832. *L[epus] crassicaudatus* I. Geoffroy, *Mag. Zool.* 2: cl. 1, pl. 9 and text. Durban, Natal, South Africa [29° 52' S., 31° 3' E., 50 feet].

Note.—This species has not yet been recorded from Tanganyika but is included here in view of native reports of a red rock hare at Mkenya (Kondoa District), known locally as 'ntuju'; in Unyamwezi (Tabora District), where it is known as 'mpumbulu'; and Iramba (northern Singida District), where it is called 'tisi'. These names are all distinct from the names for the common hares in these areas.

Subfamily LEPORINAE Trouessart.

Genus LEPUS Linnaeus. **True Hares.**

1758. *Lepus* Linnaeus, *Syst. Nat.*, ed. 10, 1: 57. Genotype, by subsequent designation (W. L. Sclater, 1901, *Fauna S. Afr., Mamm.* 2: 92), *Lepus timidus* Linnaeus.

Kiswahili: *sungura*.

LEPUS CAPENSIS ABBOTTI Hollister. **Abbott's Cape Hare.**

1918. *Lepus capensis abboti* Hollister, *Proc. biol. Soc. Wash.* 31: 35, 16 May. Serengeti Plains†, east of Kilimanjaro, Taita District, Kenya Colony [3° 25' S., 37° 55' E., 3,500 feet].

Records.—Tanga; near Dar es Salaam; Engare Nairobi; Engare Nanyuki; Lol-bene, southern Masailand; Berega; Irangi; Usongo; Igonda, Tabora; Miki-dani.

LEPUS CAPENSIS CRAWSHAYI de Winton. **Ukamba Cape Hare.**

1899. *Lepus crawshayi* de Winton, *Proc. zool. Soc. Lond.* 1899: 415, 416, pl. 24, 1 Aug. Kitui, 3,400 feet, Kitui District, Kenya Colony [1° 22' S., 38° 1' E.].

Records.—Bukoba; Iringa.

* The late Dr. Austin Roberts informed the authors (*in litt.*) that it had been his intention to nominate "Vryburg district, north of Litakun, northern Cape Province, South Africa," as type-locality.

† These Serengeti Plains are not to be confused with the better-known plains of the same name lying many miles to the west, between the Rift Wall and Lake Victoria, in northern Tanganyika Territory.

LEPUS VICTORIAE VICTORIAE Thomas. Lake Victoria Hare.

1893. *Lepus victoriae* Thomas, *Ann. Mag. nat. Hist.* 12: 268, Oct. Nasa, south of Speke Gulf, Lake Victoria, Mwanza District, Tanganyika Territory.

Records.—Misinko, Msogaa, Ushora; Olduwai; Serengeti Plains; Nasa, Ukerewe Island; Zagayu; Shinyanga; Ihila; Madehani.

LEPUS WHYTEI Thomas. Whyte's Hare.

1894. *Lepus whytei* Thomas, *Proc. zool. Soc. Lond.* 1894: 142, June. Palombe River, Shirwa Plain, borders of Mlanje and Zomba Districts, southern Nyasaland [15° 35' S., 35° 35' E., ca 2,000 feet].

Records.—Lindi, Tendaguru.

Genus ORYCTOLAGUS Lilljeborg. True Rabbits.

1874. *Oryctolagus* Lilljeborg, *Sverig. Norges Rygg.* 1: 417, 441. As a subgenus of *Lepus* Linnaeus; genotype, by original designation, *Lepus cuniculus* Linnaeus.

(ORYCTOLAGUS CUNICULUS CUNICULUS (Linnaeus). Domesticated Rabbit.

1758. *Lepus Cuniculus* Linnaeus, *Syst. Nat.*, ed. 10, 1: 58. Southern Europe. *Status*.—Introduced under domestication.)

Order **RODENTIA** Bowdich. **Rodents.**

Suborder **HYSTRICOMORPHA** Brandt.

Superfamily **BATHYERGOIDEA** Osborn.

Family **BATHYERGIDAE** Waterhouse.

Kiswahili: *fuko*.

Genus HELIOPHOBIUS Peters. Blesmols.

1846. *Heliophobius* Peters, *Ber. Verh. preuss. Akad. Wiss., Berl.* 1846: 259, Aug. Genotype, by monotypy, *Heliophobius argenteocinereus* Peters.

HELIOPHOBIUS SPALAX Thomas.

1910. *Heliophobius spalax* Thomas, *Ann. Mag. nat. Hist.* 6: 315, Sept. Taveta, 2,500 feet, south-east of Kilimanjaro, Taita District, Kenya Colony [3° 25' S., 37° 40' E.].

Record.—Engare Nairobi.

HELIOPHOBIUS ARGENTEOCINEREUS ARGENTEOCINEREUS Peters. Zambesi Blesmol.

1846. *Heliophobius argenteo-cinereus* Peters, *Ber. Verh. preuss. Akad. Wiss., Berl.* 1846: 259, Aug. Tete, south bank of Zambesi River, Boroma District, Portuguese East Africa [16° 9' S., 33° 36' E., 250 feet].

Records.—Bagamoyo, Mandera; Tendaguru.

HELIOPHOBIUS ARGENTEOCINEREUS EMINI Noack. Emin's Blesmol.

1893. *Heliophobius emini* Noack, *Zool. Jb., Syst.* 7: 559, pl. 18, f. 5-9, 23 Dec. Kingolwira, Morogoro District, Tanganyika Territory.

Records.—Amani; Kingolwira, Morogoro; Kipera; Dodoma; Kakoma (*subsp. incert.*); Shinyanga (*subsp. incert.*).

HELIOPHOBIUS ARGENTEOCINEREUS ALBIFRONS (Gray).

1864. *Georychus albifrons* Gray, *Proc. zool. Soc. Lond.* 1864: 123, July. East Africa, possibly Tanganyika Territory; the type was collected by Capt. Speke between September, 1860 and February, 1863.

Records.—Morogoro; Liwale.

HELIOPHOBIUS ARGENTEOCINEREUS PALLIDUS (Gray)*.

1864. *Georychus pallidus* Gray, *Proc. zool. Soc. Lond.* 1864: 124, text-f. 2, 7, July. East Africa.

Record.—Karagwe.

* Ellerman (1940, 1: 85) has indicated that this species may be synonymous with *H.a. albifrons* (Gray).

Genus *CRYPTOMYS* Gray. "Mole"-rats.

1864. *Cryptomys* Gray, *Proc. zool. Soc. Lond.* 1864: 124, text f. 3, 6, Juy. As a subgenus of *Georychus* Illiger; genotype, by monotypy, *Georychus/holosericeus* Wagner.

CRYPTOMYS HOTTENTOTUS OCCLUSUS G. M. Allen and Loveridge.

1933. *Cryptomys hottentotus occlusus* G. M. Allen and Loveridge, *Bull. Mus. comp. Zool. Harv.* 75: 125, Feb. Kigogo, 6,000 feet, Uzungwa Mts., Iringa District, Tanganyika Territory.

Records.—Mt. Hanang; Kigogo; Liwale.

CRYPTOMYS HOTTENTOTUS WHYTEI (Thomas).

1897. *Georychus whytei* Thomas, *Proc. zool. Soc. Lond.* 1897: 432, 1 Oct. Karonga, north-west corner of Lake Nyasa, northern Nyasaland [9° 56' S., 33° 56' E., 1,600 feet].

Records.—Ujiji; Poroto Mts. at Igali; Iloilo, Tukuyu.

Superfamily HYSTRICOIDEA Gill.

Family ECHIMYIDAE Miller and Gidley.

Genus *THRYONOMYS* Fitzinger. *Cane-rats*.

1867. *Thryonomys* Fitzinger, *S. B. Akad. Wiss. Wien* 56 (1): 141. Genotype *Aulacodus semipalmatus* Heuglin=*Aulacodus variegatus* Peters.

1922. *Choromys* Thomas, *Ann. Mag. nat. Hist.* 9: 390, April. Genotype, by original designation, *Aulacodus gregorianus* Thomas.

Kiswahili: *ndezi*.

THRYONOMYS GREGORIANUS cf. T. G. GREGORIANUS (Thomas). *Lesser cane-rat*.

1894. *Aulacodus gregorianus* Thomas, *Ann. Mag. nat. Hist.* 13: 202, Feb. Luijireru River, 5,700 feet, in Kikuyu, north of Fort Hall, Kenya Colony [0° 35' S., 37° 5' E.].

Record.—Karema.

THRYONOMYS SWINDERIANUS VARIEGATUS (Peters.). *Larger Cane-rat*.

1852. *Aulacodus variegatus* Peters, *Reise Mossamb., Säuegeth.*, p. 138. Tete, south bank of Zambesi River, Boroma District, Portuguese East Africa [16° 9' S., 33° 36' E., 250 feet].

Records.—Tanga; Lake Jipe; Arusha Chini; Kingoni; Mkindo River, Mhonda; Kilosa, Kipera, Madazini, Miyombo; Matandu River, Mbemkuru River, Rovuma River; Lake Bicha, Kondoa, Lake Serya; Mwanza, Ukerewe Island; Ugala; Karema; Lupa River, Lake Rukwa, Songwe (Rukwa) River; Mombo (Saisi) River.

Family HYSTRICIDAE Burnett. *Porcupines*.Genus *HYSTRIX* Linnaeus*.

1758. *Hystrix* Linnaeus, *Syst. Nat.*, ed. 10, 1: 56. Genotype, by subsequent designation (W. L. Sclater, 1901, *Fauna S. Afr.*, *Mamm.* 2: 89), or tautonymy [*fide* Thomas, 1911, *Proc. zool. Soc. Lond.* 1911: 144], *Hystrix cristata* Linnaeus.

Kiswahili: *nungu*.

HYSTRIX AFRICAETHRAUSALIS AFRICAETHRAUSALIS Peters.

1852. *Hystrix Africae australis* Peters, *Reise Mossamb., Säuegeth.*, p. 170, pl. 32. f. 6, 7 (skull). Querimba Coast, northern coastal Portuguese East Africa [ca 10° 30' to 12° S., 40° 30' E., sea-level] [*fide* Moreau, Hopkins and Hayman, 1946: 430].

Record.—Kitaya.

* Porcupines are more widespread and common than the few records given here would appear to indicate. Their quills may be found in almost all parts of Tanganyika. However, more records are not included as it is uncertain to which species they should be referred.

HYSTRIX AFRICAEAUSTRALIS PRITTWITZI F. Müller.

1910. *Hystrix africae-australis prittwitzii* F. Müller, *S. B. Ges. naturf. Fr. Berl.* 1910: 311, text-f. 2, 313 (subspecific name omitted), Oct. Tabora, in Unyanyembe, Tabora District, Tanganyika Territory.

Records.—Kingori Juu; Ugogo; Tabora, Unyamwezi; Galagala River.

HYSTRIX AFRICAEAUSTRALIS subsp.

Record.—Zanzibar Island.

HYSTRIX GALEATA AMBIGUA LÖNNBERG.

1908. *Hystrix galeata ambigua* Lönnberg, *Wiss. Ergebn. schwed. zool. Exped. Kilimandjaro 2: Mamm.*, p. 29. pl. 5, f. 3. (skull). Kibongoto, south-west foothills of Kilimanjaro, Moshi District, Tanganyika Territory.

1910. *Hystrix galeata lönnbergi* F. Müller, *S. B. Ges. naturf. Fr. Berl.* 1910: 314, text-f. 4, 315, Oct. Mamba, east of Marangu, eastern foothills of Kilimanjaro, northern Tanganyika Territory.

Records.—Kibongoto, Kilimanjaro up to 11,500 feet; Mt. Meru rain-forest at 3,000 metres.

HYSTRIX GALEATA CONRADSI F. Müller.

1910. *H[ystrix] galeata conradsi* F. Müller, *S. B. Ges. naturf. Fr. Berl.* 1910: 314, Oct. Ukerewe Island, Lake Victoria, Tanganyika Territory [*vide* G. M. Allen and Loveridge, 1933: 127].

Records.—Serengeti Plains; Ukerewe Island; Shanwa, Zagayu; Shinyanga.

HYSTRIX GALEATA LADEMANNI F. Müller.

1910. *H[ystrix] galeata ludemanni* (sic) F. Müller, *S. B. Ges. naturf. Fr. Berl.* 1910: 314, Oct. Kondoa, in Irangi, Kondoa District, central Tanganyika Territory [*vide* Moreau, Hopkins and Hayman, 1946: 430].

Records.—Kilosa, Kipera; Kondoa; Puma; Kimatu, Mikwesi, Ndaburo; Dodoma; Rumuli.

Superfamily CAVIOIDEA Kraglievich.

Family CAVIIDAE Waterhouse.

Genus CAVIA Pallas. **Guinea-pigs, Cavies.**

1766. *Cavia* Pallas, *Misc. Zool.*, p. 30. Genotype *Cavia cobaya* Pallas = *Mus porcellus* Linnaeus.

(CAVIA PORCELLUS (Linnaeus). **Domesticated Guinea-pig.**

1758. *Mus Porcellus* Linnaeus, *Syst. Nat.*, ed. 10, 1: 59. Brazil, South America. *Status*.—Introduced under domestication.)

Suborder SCIUROMORPHA Brandt.

Family SCIURIDAE Gray. **Squirrels.**Tribe *Funambulini* Simpson. **African Tree Squirrels.**

Kiswahili: *kindi, kidiri.*

Genus HELIOSCIURUS Trouessart.

1880. *Heliosciurus* Trouessart, *Le Naturaliste* 1: 292, 1 Oct. As a subgenus of *Sciurus* Linnaeus; genotype, by subsequent designation (Thomas, 1897, *Proc. zool. Soc. Lond.* 1897: 933), *Sciurus amulatus* Desmarest.

Subgenus HELIOSCIURUS Trouessart.

HELIOSCIURUS GAMBIANUS RHODESIAE (Wroughton).

1907. *Funisciurus amulatus rhodesiae* Wroughton, *Mem. Manchr. lit. phil. Soc.*

51 (5): 15, 13 March. Road to Chiwale's, 4,000 feet, Alala Plateau on top of the Muchinga Scarp, Serenje District, Northern Rhodesia [Chiwale's is at 13° 46' S., 30° 5' E.].
Records.—Kakoma; Kitungulu.

HELIOSCIURUS GAMBIANUS MUTABILIS (Peters).

1852. *Sciurus mutabilis* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1852: 273, May; *Reise Mossamb., Südeeth.*, p. 131, pl. 30; pl. 32, f. 2. Boror, 12 miles north-west of Quelimane, Portuguese East Africa [17° 50' S., 36° 45' E., coastal].

1867. *Macroxus shirensis* Gray, *Ann. Mag. nat. Hist.* 20: 327, Nov. Shire River, southern Nyasaland.

Records.—Madehani; Nkuka Forest; Igali.

HELIOSCIURUS GAMBIANUS UNDULATUS (True).

1892. *Sciurus undulatus* True, *Proc. U. S. nat. Mus.* 15: 465, text-f. 3, 26 Oct. Kilimanjaro, 6,000 feet, Kenya Colony [*vide* Hollister, 1919: 11, who states that the type came from "British East Africa"—Kenya Colony].

Records.—Amani, Magroto, Mkulumuzi Caves; Pangani; Bumbuli, Bungu, Mombo; Kahe, Kibongoto, Kilimanjaro; Arusha.

HELIOSCIURUS GAMBIANUS DOLOSUS Thomas.

1909. *Heliosciurus undulatus dolosus* Thomas, *Ann. Mag. nat. Hist.* 4: 100, Aug. Mafia Island, opposite the Rufiji River delta, off the east coast of Tanganyika Territory.

Records.—Mafia and Zanzibar Islands.

HELIOSCIURUS GAMBIANUS NYANSAE (Neumann).

1902. *Sciurus nyanse* Neumann, *S. B. Ges. naturf. Fr. Berl.* 1902: 56. Sidho (Kitoto's), Nyando River Valley, Central Kavirondo District, Kenya Colony [0° 7' S., 35° 7' E.].

Record.—Kiantwara.

Subgenus *AETHOSCIURUS* Thomas.

1916. *Aethosciurus* Thomas, *Ann. Mag. nat. Hist.* 17: 271, March. Genotype, by original designation, *Sciurus poensis* A. Smith.

HELIOSCIURUS LUCIFER (Thomas).

1897. *Xerus (Paraxerus) lucifer* Thomas, *Proc. zool. Soc. Lond.* 1897: 430, 1 Oct. Forested summits in the Masuku Range, North Nyasa District, northern Nyasaland [ca 9° 42' S., 33° 30' E., 5,500 feet*].

Record.—Nkuka Forest.

HELIOSCIURUS VEXILLARIUS (Kershaw). *Swynnerton's Forest Squirrel*.

1923. *Funisciurus vexillarius* Kershaw, *Ann. Mag. nat. Hist.* 11: 591, May. Lushoto, Usambara Mts., north-eastern Tanganyika Territory.

Records.—Usambara Mts. at Lushoto and Magamba.

Genus *PARAXERUS* Major. *African Bush Squirrels*.

1893. *Paraxerus* Major, *Proc. zool. Soc. Lond.* 1893: 189, pl. 8, f. 22; pl. 9, r. 23, 1 June. As a subgenus of *Xerus* Ehrenberg; genotype *Sciurus cepapi* A. Smith.

1918. *Tamiscus* Thomas, *Ann. Mag. nat. Hist.* 1: 33, Jan. Genotype, by original designation, *Sciurus emini* Stuhlmann.

* The altitude "7,000 feet" given in the original is incorrect since the highest point of the Masuku Range is little over 5,500 feet.

PARAXERUS CEPAPI YULEI (Thomas).*

1902. *Funisciurus yulei* Thomas, *Proc. zool. Soc. Lond.* 1902 (1): 120, 1 June. Mwenzo†, Northern Province, north-eastern Northern Rhodesia [9° 20' S., 32° 40' E., 5,000 feet].

Records.—Igigwa, Kakoma, Mawele, Tabora; Kigoma; Kasanga.

PARAXERUS OCHRACEUS OCHRACEUS (Huet).

1880. *Sciurus ochraceus* Huet, *Novv. Arch. Mus. Hist. nat. Paris* 3: 154, pl. 7, f. 2. Bagamoyo, east coast of Tanganyika Territory.

1909. *Paraxerus ochraceus salutans* Thomas, *Ann. Mag. nat. Hist.* 4: 106, Aug. Dar es Salaam, east coast of Tanganyika Territory.

Records.—Bagamoyo, Dunda, Ukwere; Dar es Salaam, Dilangilo, Kiserawe, Mafisi; Kingolwira, Kinole, Mkindo River, Morogoro; Mkata River, Lukinga; Kongwa; Dodoma; Bubu River; Urugu; Lupa Bridge, Ngomba River, Njila; Mambwe.

PARAXERUS OCHRACEUS ARUSCENSIS (Pagenstecher).

1885. *Sciurus cepapi* Smith var. *Aruscensis* Pagenstecher, *Jb. hamburg. wiss. Anst.* 2: 42. Arusha, south-west foot of Mt. Meru, northern Tanganyika Territory.

1894. *Sciurus pauli* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1894: 256. Ndarema, Usambara Mts., Tanga District, north-eastern Tanganyika Territory. [Probably a synonym of *P.o.aruscensis* (Pagenstecher).]

Records.—Amboni, Mkulumuzi Caves, Ndarema; Pangani, Ruvu (or Pangani) River near the coast; Mombo; Mwembe; Kibongoto, Rombo; Arusha, forest on Mt. Meru; Lendana.

PARAXERUS PALLIATUS BRIDGEMANI Dollman.

1914. *Paraxerus bridgemani* Dollman, *Ann. Mag. nat. Hist.* 14: 152, Aug. Induk, 700 feet, Panda, Portuguese East Africa.

Records.—Kiperere, Murembwi River; Nchingidi; Kitaya, Mikindani.

PARAXERUS PALLIATUS SUAHELICUS (Neumann).

1902. *Sciurus palliatus suahelicus* Neumann, *S. B. Ges. naturf. Fr. Berl.* 1902: 178. Northern coastal area of Tanganyika Territory.

Records.—Amani, Mkulumuzi Caves, Tanga; Pangani; Bagamoyo, Kingoni, Mtoni; Dar es Salaam, Dilangilo, Kiserawe; Bogoti, Mgeta, Mhonda, Morogoro, Nguru, Ukutu, Wami River; Kipera, Madazini, Mweni, Mkata River; upper Bubu River; Ndogwe.

PARAXERUS PALLIATUS FREREI (Gray).

1873. *Macroxus amulatus*, var. *Freerei* Gray, *Ann. Mag. nat. Hist.* 12: 265, Sept. Zanzibar Island.

1906. *Funisciurus palliatus Lastii* Thomas, *Ann. Mag. nat. Hist.* 18: 297, Oct. Zanzibar Island.

Records.—Mafia and Zanzibar Islands.

* Recorded by G. M. Allen and Loveridge (1933: 98) as *P.c. quottus* Wroughton (1909, *Ann. Mag. nat. Hist.* 3: 516, June; near the Dikulwe River, Katanga, Belgian Congo) but, on geographical grounds, specimens from south-western Tanganyika are probably referable to *P.c. yulei* (Thomas) whose type-locality is intermediate between that of *P.c. quottus* and the localities listed above.

† *P.c. yulei* was founded on a specimen which came in a collection of mammals from northern Nyasaland, north-eastern Northern Rhodesia and the Lake Mweru area. On the original label attached to the type-specimen the collector entered "Mwezo" as the locality at which the squirrel was obtained, and to this Thomas added "near Lake Mweru;" this is generally quoted as the type-locality of *P.c. yulei*. However, no "Mwezo" can be traced in the neighbourhood of Lake Mweru and it is suggested that the locality is, in fact, Mwenzo, a mission station on the old Stevenson Road between Lake Nyasa and the south end of Lake Tanganyika, and within the area from which the collection came. Mwenzo lies just inside Northern Rhodesia.

PARAXERUS FLAVIVITTIS EXGEANUS Hinton.

1920. *Paraxerus flavivittis exgeanus* Hinton, *Ann. Mag. nat. Hist.* 5: 311, March. Kilwa Kisiwani, east coast of Tanganyika Territory.

Records.—Kilwa Kisiwani; Lindi, Mbanja, Nchingidi, Tendaguru; Kitaya.

PARAXERUS FLAVIVITTIS IBEANUS Hinton.

1920. *Paraxerus flavivittis ibeanus* Hinton, *Ann. Mag. nat. Hist.* 5: 312, March. Mombasa, east coast of Kenya Colony [4° 3' S., 39° 40' E., sea-level].

Records.—Kiongoni; Dar es Salaam; Morogoro.

PARAXERUS cf. P. VULCANORUM (Thomas).

1918. *Tamiscus vulcanorum vulcanorum* Thomas, *Ann. Mag. nat. Hist.* 1: 35, Jan. Buhumba, 6,500 feet, south-west slopes of Mt. Karisimbi, Kivu District, Belgian Congo [1° 31' S., 29° 21' E.].

Records.—Kakindu; Mkalinzi.

PARAXERUS BYATTI BYATTI (Kershaw).

1923. *Funisciurus byatti* Kershaw, *Ann. Mag. nat. Hist.* 11: 592, May. Old Moshi, south slopes of Kilimanjaro, northern Tanganyika Territory.

Records.—Amani; Mt. Lutindi; Kilimanjaro, Old Moshi; Bagiro, Nyange, Nyingwa; Kigogo.

PARAXERUS BYATTI LAETUS (G. M. Allen and Loveridge).

1933. *Aethosciurus byatti laetus* G. M. Allen and Loveridge, *Bull. Mus. comp. Zool. Harv.* 75: 96, Feb. Madehani, Livingstone Mts., Njombe District, south-western Tanganyika Territory.

Records.—Madehani; Kitesa Forest.

Tribe *Xerini* Simpson. **African Ground Squirrels.**Genus *XERUS* Ehrenberg.

1833. *Xerus* Ehrenberg, *Symb. Phys., Mamm.* 1: sign. ee, text to pl. 9, Aug. As a subgenus of *Sciurus* Linnaeus; genotype *Sciurus (Xerus) brachyotus* Ehrenberg = *Sciurus rutilus* Cretzschmar.

XERUS RUTILUS SATURATUS Neumann.

1900. *Xerus saturatus* Neumann, *Zool. Jb., Syst.* 13: 546, 10 Oct. Kibwezi, 80 miles north-west of Voi, Machakos District, Kenya Colony [2° 25' S., 37° 57' E., 2,985 feet].

Records.—Mkomazi, Mombo; Kilimanjaro foothills; Engare Nanyuki; Longido.

Suborder **MYOMORPHA** Brandt.Superfamily **ANOMALUROIDEA** Gill.Family **ANOMALURIDAE** Gill.Genus **ANOMALURUS** Waterhouse. **Scaly-tailed "Flying Squirrels."**

1843. *Anomalurus* Waterhouse, *Proc. zool. Soc. Lond.* 1842: 124, Jan. Genotype, by monotypy, *Anomalurus fraseri* Waterhouse.

ANOMALURUS FRASERI ORIENTALIS Peters.

1880. *Anomalurus orientalis* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1880: 164, pl. (col.). "Zanzibar Coast," i.e. the mainland coast of East Africa opposite Zanzibar Island [fide Moreau, Hopkins and Hayman, 1946: 414].

Records.—Amani, Magroto, Sigi River; Mhonda, Vituri,

ANOMALURUS FRASERI CINEREUS Thomas.

1895. *Anomalurus cinereus* Thomas, *Ann. Mag. nat. Hist.* 15: 188, Feb. Upper Rovuma River, towards Lake Nyasa, Songea District, southern Tanganyika Territory.

*Records.**—Kilwa, Makumba; Kihuma; upper Rovuma River.

* G. M. Allen and Loveridge (1933: 91) give a doubtful record from the Nkuka Forest, Ruwenzori Mt., under " ? *Anomalurus orientalis* Peters."

Superfamily PEDETOIDEA.

Family PEDETIDAE Owen.

Kiswahili: *kamendegere*.Genus PEDETES Illiger. **Spring Haas, Jumping "Hares."**

1811. *Pedetes* Illiger, *Prod. Syst. Mamm. Av.*, p. 81. Genotype, by monotypy, *Dipus cafer* Pallas.

PEDETES CAFER TABORAE G. M. Allen and Loveridge. **Unyamwezi Spring Haas.**

1927. *Pedetes cafer taborae* G. M. Allen and Loveridge, *Proc. Boston Soc. nat. Hist.* 38: 438, Dec. Tabora, in Unyamwezi, western Tanganyika Territory.

Records.—Ibunua, Suna; Handajega, Serengeti; Shinyanga; Kahama; Tabora.

PEDETES CAFER DENTATUS Miller. **Ugogo Spring Haas.**

1927. *Pedetes cafer dentatus* Miller, *Proc. biol. Soc. Wash.* 40: 113, 26 Sept. Near Dodoma, in Ugogo, central Tanganyika Territory.

Records.—Near Morogoro; Kibaya, southern Masailand; Umlugwe; Kondoa, Sandawe; near Dodoma; Mikwesi.

Superfamily MUROIDEA Miller and Gidley.

Family GLIRIDAE Thomas.

Kiswahili: *panya miti*.Genus GRAPHIURUS Smuts*. **African Dormice.**

1832. *Graphiurus* Smuts, *Enum. Mammal. Cap.*, p. 32. Genotype *Graphiurus capensis* Smuts=*Sciurus ocellaris* A. Smith.

Subgenus CLAVIGLIS Jentink.

1888. *Claviglis* Jentink, *Notes Leyden Mus.* 10: 41. Genotype, by original designation, *Claviglis crassicaudatus* Jentink.

GRAPHIURUS PARVUS cf. G. P. DOLLMANI Osgood.

1910. *Graphiurus parvus dollmani* Osgood, *Field Mus. Publ., Zool.* 10: 15, 7 April. Lukenya Hill, 20 miles south-east of Nairobi, Machakos District, Kenya Colony 1°30' S., 37° 4' E., 5,000 to 6,029 feet].

Record.—Kibongoto.

GRAPHIURUS MURINUS COLLARIS (G. M. Allen and Loveridge).

1933. *Claviglis soleatus collaris* G. M. Allen and Loveridge, *Bull. Mus. comp. Zool. Harv.* 75: 122, Feb. Madehani, 7,200 feet, Livingstone Mts., Njombe District, Tanganyika Territory.

Records.—Madehani; Mambwe.

GRAPHIURUS MURINUS ISOLATUS Heller. **Taita Forest Dormouse.**

1912. *Graphiurus murinus isolatus* Heller, *Smithson. misc. Coll.* 59 (16): 3, 5 July. Mt. Umingu, 5,000 feet, north end of Taita Hills, Taita District, Kenya Colony [3° 20' S., 38° 23' E.].

Records.—Tanga, Ndarema; Mgera; west slope of Kilimanjaro at 8,500 feet, Kibongoto; Kiskwe, Njogi; Dodoma; Konko; western side of Wembere Plain; Dabaga.

* Some authors (Sherborn, Neave) ascribe this genus to Cuvier (1829, in Geoffroy and Cuvier, *Hist. nat. Mammif.*, vol. 3, livr. 60, p. 2, Sept.). Cuvier, however, did not use a generic name, but referred to the "*Graphiure du Cap*," to which he gave the specific name "*Capensis*." This reference, then, is technically invalid.

GRAPHIURUS MICROTIS (Noack)*.

1887. *Eliomys microtis* Noack, *Zool. Jb.* 2: 248, pl. 9, f. 19-22, 7 May. Mpala's, west shore of Lake Tanganyika, in Marungu, Belgian Congo [6° 45' S., 29° 31' E., 3,900 feet].

Records.—Kainam; Bukoba; Kasulu.

GRAPHIURUS SMITHII (Thomas).

1893. *Myoxus (Eliomys) Smithii* Thomas, *Ann. Mag. nat. Hist.* 12: 267, Oct. Nasa, south shore of Speke Gulf, Lake Victoria, Tanganyika Territory.

1900. [*Eliomys murinus*] *subrufus* Neumann, *Zool. Jb., Syst.* 13: 547, 10 Oct. Tanga, north-east coast of Tanganyika Territory. [Probably a synonym of *G. smithii* (Thomas).]

Records.—Tanga; Mgera, Morogoro; Nasa; Bukoba; Kakoma.

Family MURIDAE Gray.

Subfamily MURINAE Murray.

Genus GRAMMOMYS Thomas. Tree Rats.

1915. *Grammomys* Thomas, *Ann. Mag. nat. Hist.* 16: 150, Aug. Genotype, by original designation, *Mus dolichurus* Smuts.

Kiswahili: *panya miti*.

GRAMMOMYS SURDASTER SURDASTER (Thomas and Wroughton). Nyasaland Tree Rat.

1908. *Thamnomys surdaster* Thomas and Wroughton, *Proc. zool. Soc. Lond.* 1908: 550, 30 Oct. Zomba, southern Nyasaland [15° 24' S., 37° 17' E., ca 3,000 feet].

Records.—Amani, Magroto; Mt. Lutindi, Magamba; Kibongoto, Rombo; Bagiro, Bogoti, Kinole, Mkangazi, Morogoro, Uluguru Mts.; Tendigo; Kainam; Bukoba, Bumbiri Island; Dabaga, Kigogo; Madehani.

Genus OENOMYS Thomas. Rusty-nosed Rats.

1904. *Oenomys* Thomas, *Ann. Mag. nat. Hist.* 13: 416, June. Genotype, by original designation, *Mus hypoxanthus* Pucheran.

Kiswahili: *panya*.

OENOMYS HYPOXANTHUS (Pucheran).

1855. *Mus hypoxanthus* Pucheran, *Rev. Mag. Zool.* 7: 206, April. Gaboon.

Record.—Tanganyika Territory, according to a St. Leger MS in the British Museum.

Genus DASYMYS Peters. Shaggy Swamp Rats.

1875. *Dasymys* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1875: 12. Genotype, by monotypy, *Dasymys gueinzii* Peters = *Mus incommutatus* Sundevall.

Kiswahili: *panya*.

DASYMYS INCOMMUTATUS HELUKUS Heller. Uasin Gishu Shaggy Swamp Rat.

1910. *Dasymys helukus* Heller, *Smithson. misc. Coll.* 54 (4): 2, pl. 1, b (skull), 28 Feb. Sergoit, 10 miles north-east of Eldoret, Uasin Gishu District, Kenya Colony [0° 39' N., 35° 23' E., ca 7,000 feet].

Records.—Uluguru Mts.; Dabaga, Kigogo; Madehani, Njombe; Igali; Iloilo; Mtumba.

* Considered by G. M. Allen (1939: 309) to be a synonym of *G.m. murinus* (Desmarest, 1822, *Encycl. méth., Mamm., Suppl.*, p. 542; Cape of Good Hope, South Africa); treated as a valid species by Ellerman (1940: 610) and Hatt (1940: 1).

Genus ARVICANTHIS Lesson. **Unstriped Grass Mice.**

1842. *Arvicanthus* Lesson, *Nouv. Tabl. Règne Anim., Mammif.*, p. 147, Nov. Genotype, by monotypy and original designation, "*Lemmus niloticus*" E. Geoffroy, 1803=*Hypudaus variegatus* Lichtenstein, 1823 [fide Yerbury and Thomas, 1895, *Proc. zool. Soc. Lond.* 1895: 553, footnote]=*Arvicola niloticus* Desmarest, 1822.

Kiswahili: *panya*.

ARVICANTHIS ABYSSINICUS REICHARDI (Noack)*. **Ufipa Unstriped Grass Mouse.**

1887. *Pelomys reichardi* Noack, *Zool. Jb.* 2: 235, pl. 9, f. 4-7, 7 May. Near Karema, east shore of Lake Tanganyika, Mpanda District, western Tanganyika Territory.

Records.—Near Karema; Sumbawanga.

ARVICANTHIS ABYSSINICUS cf A. A. VIRESCENS Heller. **Taita Unstriped Grass Mouse.**

1914. *Arvicanthus abyssinicus virescens* Heller, *Smithson. misc. Coll.* 63 (7): 11, 24 June. Voi, Taita District, Kenya Colony [3° 24' S., 38° 33' E., 1,830 feet.].

Records.—Kibosho; Same.

ARVICANTHIS ABYSSINICUS RUBESCENS Wroughton. **Bunyoro Unstriped Grass Mouse.**

1909. *Arvicanthus abyssinicus rubescens* Wroughton, *Ann. Mag. nat. Hist.* 4: 538. Dec. Kibiro, east shore of Lake Albert, Bunyoro District, Uganda Protectorate [1° 40' N., 31° 15' E., 2,025 feet].

Records.—Kabale, Kakindu.

ARVICANTHIS ABYSSINICUS MUANSAE Matschie. **Usukuma Unstriped Grass Mouse.**

1911. *Arvicanthus abyssinicus muansae* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1911: 339, Oct. Mwanza, south shore of Lake Victoria, Tanganyika Territory.

Records.—Banagi; Mwanza; Lalago, Sanga, Shanwa, Zagayu.

ARVICANTHIS ABYSSINICUS NEUMANNI (Matschie). **Barungi Unstriped Grass Mouse.**

1894. *Mus neumanni* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1894: 204. Barungi, Kondoa District, central Tanganyika Territory.

Records.—Kibaya, Longido, southern Masailand; Barungi, Kwa Mtoro; Ikikuyu Kidenge, Mpanira; Dodoma; Ibunua; Ikungi, Msogaa, Nshinshi, Puma, Singida, Suna, Unyang'anyi.

ARVICANTHIS ABYSSINICUS TENEBROSUS Kershaw. **Unyamwezi Unstriped Grass Mouse.**

1923. *Arvicanthus abyssinicus tenebrosus* Kershaw, *Ann. Mag. nat. Hist.* 11: 595, May. Tabora, in Unyamwezi, western Tanganyika Territory.

Records.—Igonda, Isikisia, Tabora.

Genus PELOMYS Peters. **Creek Rats.**

1852. *Pelomys* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1852: 275, May. As a subgenus of *Mus* Linnaeus; genotype, by monotypy, *Mus (Pelomys) fallax* Peters.

Kiswahili: *panya*.

PELOMYS FALLAX IRIDESCENS Heller. **Taita Creek Rat.**

1912. *Pelomys fallax iridescens* Heller, *Smithson. misc. Coll.* 59 (16): 12, 5 July. Mt. Mbololo, 5,000 feet, Taita Hills, Taita District, Kenya Colony [3° 18' S., 38° 27' E.].

Records.—Amani, Magroto; Ambangulu, West Usambara Mts.; Kiserawe; Kibongoto; Mt. Meru foothills; Bagiro, Kinole, Morogoro, Nyange, Nyirigwa, Uluguru Mts.; Tendigo; Rumuli.

* Ellerman (1941: 125) includes *Pelomys reichardi* Noack in the synonymy of *Arvicanthus a. abyssinicus* (Rüppell, 1842, *Mus. senckenb.* 3: 104, pl. 7, f. 1; Entschetqab, Simen Province, Abyssinia), though he lists more than ten other valid subspecies of *A. abyssinicus* between the type-localities of *reichardi* and *abyssinicus*. G. M. Allen (1939: 377) places *reichardi* as a valid subspecies of *Arvicanthus niloticus* (Desmarest, 1822, *Encycl. méth., Mamm.*, p. 281; Egypt).

PELOMYS FALLAX INSIGNATUS Osgood. Nyasa Creek Rat.

1910. *Pelomys fallax insignatus* Osgood, *Ann. Mag. nat. Hist.* 5: 276, March.
Fort Hill, North Nyasa District, northern Nyasaland [9° 43' S., 33° 16' E., ca 4,000 feet].
Records.—Nchingidi; Ilole, Tukuyu; Sumbawanga.

Genus LEMNISCOMYS Trouessart. Striped Grass Mice.

1881. *Lemniscomys** Trouessart, *Bull. Soc. Étud. sci. Angers* 10: 124. As a sub-genus of *Mus* Linnaeus; genotype, by subsequent designation (Thomas, 1916, *Ann. Mag. nat. Hist.* 18: 67, July), *Mus barbarus* Linnaeus.

Kiswahili: *panya*.

LEMNISCOMYS BARBARUS cf. L. B. CONVICTUS (Osgood). Taita Striped Grass Mouse.

1910. *Arvicanthis barbarus convictus* Osgood, *Field Mus. Publ., Zool.* 10: 10, 16 Feb. Voi, Taita District, Kenya Colony [3° 24' S., 38° 33' E., 1,830 feet].
Record.—Kilimanjaro foothills.

LEMNISCOMYS BARBARUS MANTEUFELI Matschie. Usukuma Striped Grass Mouse.

1911. *Lemniscomys barbarus manteufeli* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1911: 338, Oct. Mwanza, south shore of Lake Victoria, Tanganyika Territory.
Records.—Mwanza; Bukoba, Mtangata.

LEMNISCOMYS BARBARUS SPEKEI (de Winton). Speke's Striped Grass Mouse.

1897. *Arvicanthis Spekei* de Winton, *Ann. Mag. nat. Hist.* 20: 318, Sept. Unyamwezi, Western Province, Tanganyika Territory.
Records.—Barungi, Irangi; Ikungi, Misinko, Ndogwe, Nshinshi, Puma, Suna; Ndala; Isikisia, Tabora, Ugala River.

LEMNISCOMYS STRIATUS MASSAICUS (Pagenstecher). Naivasha Punctated* Grass Mouse.

1885. *Mus (Lemniscomys) barbarus* L. var *Massaicus* Pagenstecher, *Jb. hamburg. wiss. Anst.* 2: 45. Vicinity of Lake Naivasha, Rift Valley, Kenya Colony [0° 45' S., 36° 22' E., ca 6,300 feet] [*fide* Hollister, 1919: 139].
Record.—Ukrewa Island.

LEMNISCOMYS STRIATUS ARDENS (Thomas). Kilimanjaro Punctated Grass Mouse.

1910. *Arvicanthis pulchellus ardens* Thomas, *Ann. Mag. nat. Hist.* 6: 313, Sept. Rombo, 5,000 to 6,000 feet, south-east foothills of Kilimanjaro, northern Tanganyika Territory.

Records.—Kibongoto, Lyamungu, Rombo.

LEMNISCOMYS STRIATUS cf. L. S. LULUAE Matschie†. Lulua Punctated Grass Mouse.

1926. *Lemniscomys luluae* Matschie, *Z. Säugetierk.* 1: 112, 24 Dec. Near Lulua-bourg, Lulua River, Kasai District, Belgian Congo [6° 0' S., 22° 30' E.] [*fide* Hatt, 1940b: 509, footnote].

Record.—Mtumba.

LEMNISCOMYS GRISELDA MACULOSUS (Osgood). Taita Single-striped Grass Mouse.

1910. *Arvicanthis dorsalis maculosus* Osgood, *Field Mus. Publ., Zool.* 10: 17, 7 April. Voi, Taita District, Kenya Colony [3° 24' S., 38° 33' E., 1,830 feet].
Records.—Kainam; Barungi.

LEMNISCOMYS GRISELDA ROSALIA (Thomas). Nguru Single-striped Grass Mouse.

1904. *Arvicanthis dorsalis rosalia* Thomas, *Ann. Mag. nat. Hist.* 13: 414, June. Mhonda, Nguru Mts., eastern Tanganyika Territory.

Records.—Korogwe; Vihingo; Bogoti, Mhonda, Mkindo River, Morogoro, Nyange, Wami River; Kilosa, Kipera, Ulaya; Njombe.

* The word "punctated" is here used to indicate a dark surface marked with light longitudinal lines broken into spots, or light spots arranged in longitudinal lines; compare this with "striped" where the light lines are solid, not broken into spots.

† Considered by Hatt (1940b: 509, 511) to be a synonym of *L.s. striatus* (Linnaeus, 1758, *Syst. Nat.*, ed. 10, 1: 62) from Sierra Leone.

LEMNISCOMYS MACCULUS MACCULUS (Thomas and Wroughton). **Toro Single-striped Grass Mouse.**

1910. *Arvicanthus macculus* Thomas and Wroughton, *Trans. zool. Soc. Lond.* 19: 515, pl. 24 (left-hand f.), March. Mohokya, between the south-east foot of Mt Ruwenzori and Lake George, Toro District, Uganda Protectorate [0° 5' N., 30° 3' E., 3,400 feet].

Record.—Kibali.

Genus RHABDOMYS Thomas. **Four-striped Grass Mice.**

1916. *Rhabdomys* Thomas, *Ann. Mag. nat. Hist.* 18: 69, July. Genotype, by original designation, *Mus pumilio* Sparrman.

Kiswahili: *panya*.

RHABDOMYS PUMILIO DIMINUTUS (Thomas).

1893. *Isomys pumilio diminutus* Thomas, *Proc. zool. Soc. Lond.* 1892: 551, April. Mianzini, on top of east wall of Rift Valley east of Naivasha, Naivasha District, Kenya Colony [0° 47' S., 36° 30' E., ca 8,000 feet].

Records.—Bismarck Hut, Marangu, Rombo, Shira Plateau at 12,100 feet; rim of Ngorongoro Crater; Dabaga, Kigogo, Rumuli; Njombe, Madehani, Tandala; Iloilo, Nyamwanga.

Genus AETHOMYS Thomas. **Bush Rats.**

1915. *Aethomys* Thomas, *Ann. Mag. nat. Hist.* 16: 477, Dec. As a subgenus of *Epimys* Trouessart=*Rattus* G. Fischer; genotype, by original designation, *Epimys hindéi* (Thomas).

Kiswahili: *panya*

AETHOMYS KAISERI HINDEI (Thomas.) **Ukamba Bush Rat.**

1902. *Mus Hindei* Thomas, *Ann. Mag. nat. Hist.* 9: 218, March. Machakos, 5,400 feet in Ukamba, Machakos District, Kenya Colony [1° 32' S., 37° 16' E.].

Records.—Amboni, Magoto; Kibongoto.

AETHOMYS KAISERI MANTEUFELI (Matschie). **Usukuma Bush Rat.**

1911. *Mus (Epimys ?) manteufeli* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1911: 341, Oct. Mwanza, south shore of Lake Victoria, Tanganyika Territory.

Records.—Iringa; Mara River; Mwanza.

AETHOMYS WALAMBAE PEDESTER (Thomas). **Kigezi Bush Rat.**

1911. *Epimys walambae pester* Thomas, *Ann. Mag. nat. Hist.* 8: 376, Sept. Kigezi, 6,000 feet, Bufumbira County, Kigezi District, Uganda Protectorate [1° 16' S., 29° 46' E.].

Record.—Kakindu.

AETHOMYS CHRYSOPHILUS SINGIDAE (Kershaw). **Turu Bush Rat.**

1923. *Rattus (Aethomys) chrysophilus singidae* Kershaw, *Ann. Mag. nat. Hist.* 12: 535, Oct. Ikungi (Gwao's), in Turu, Tanganyika Territory.

Records.—Lendanaï, Longido; Ikungi, Mbono, Misinko; Morogoro; Iringa; Tendaguru.

Genus THALLOMYS Thomas. **Pencil-tailed Tree Rats.**

1920. *Thallomys* Thomas, *Ann. Mag. nat. Hist.* 5: 141, Jan. Genotype, by original designation, *Mus nigricauda* Thomas.

Kiswahili: *panya miti*.

THALLOMYS DAMARENSIS SCOTTI Thomas and Hinton. **East African Pencil-tailed Tree Rat.**

1923. *T[hallomys] scotti* Thomas and Hinton, *Proc. zool. Soc. Lond.* 1923: 493, 494, 3 Sept. Yata Plains, 4,000 feet, east of junction of Thika and Tana Rivers, Kitui District, Kenya Colony [ca 0° 55' S., 37° 42' E.].

Record.—Kikuyu.

Genus *RATTUS* G. Fischer. **Typical Rats.**

1803. *Rattus* [sic] G. Fischer, *Natmus. Naturg. Paris* 2: 128. Genotype, by subsequent designation (Hollister, 1916, *Proc. biol. Soc. Wash.* 29: 126, 6 June), *Mus decumanus* Pallas=*Mus norvegicus* Berkenhout.

1881. *Epimys* Trouessart, *Bull. Soc. Étud. sci. Angers* 10: 117. As a subgenus of *Mus* Linnaeus; genotype *Mus rattus* Linnaeus.

Kiswahili: *panya*.

Subgenus *RATTUS* G. Fischer. **House Rats.**

(*RATTUS RATTUS RATTUS* (Linnaeus). **Black Rat.**

1758. *Mus Rattus* Linnaeus, *Syst. Nat.*, ed. 10, 1: 61. Upsala, Sweden.

Records.—Amani, Tanga; Korogwe; Bagamoyo; Kiserawe; Kingolwira; Morogoro; Lyamungu; Kibaya; Barungi; Kigwa, Tabora; Bukoba; Zanzibar and, possibly, Mafia and Pemba Islands.)

(*RATTUS RATTUS ALEXANDRINUS* (E. Geoffroy). **Alexandrine Black Rat.**

1803. *Mus alexandrinus* E. Geoffroy, *Cat. Manum. Mus. Hist. nat. Paris*, p. 192. Alexandria, Egypt.

Records.—Bagamoyo; Dar es Salaam; Morogoro; Ilonga, Kilosa; Kimbande; Dodoma; Ikungi; Misinko, Puma, Suna; Zagayu; Zanzibar and, possibly, Pemba Islands.)

(*RATTUS RATTUS FRUGIVORUS* (Rafinesque). **Cream-bellied Black Rat.**

1814. *Musculus frugivorus* Rafinesque, *Préc. Découv. Trav. som.*, p. 13. Sicily.

Records.—Tendaguru; Kimbande; Kisa; Mafia and Pemba Islands.)

RATTUS RATTUS KIJABIUS (J. A. Allen). **Kijabe Black Rat.**

1909. *Mus kijabius* J. A. Allen, *Bull. Amer. Mus. nat. Hist.* 26: 169, 19 March. Kijabe, east wall of Rift Valley, Kiambu District, Kenya Colony [0° 55' S., 36° 4' E., 6,800 feet].

Records.—Magroto; Usambara; Kitaya; Dabaga; Ilolo; Mwanza, Ukerewe Island; Ujiji.

(*RATTUS RATTUS WROUGHTONI* Hinton. **Wroughton's Black Rat.**

1919. *Rattus rattus wroughtoni* Hinton, *J. Bombay nat. Hist. Soc.* 26: 384, 20 May. Coonoor, Nilgiri Hills, southern India.

Record.—Zanzibar Island.)

(*RATTUS RATTUS RUFESCENS* (Gray).

1837. *Mus rufescens* Gray, *Mag. nat. Hist.* 1: 585, Nov. Western India.

Records.—Pemba and Zanzibar Islands.)

(*RATTUS NORVEGICUS NORVEGICUS* (Berkenhout). **Brown Rat.**

1769. *Mus norvegicus* Berkenhout, *Outl. nat. Hist. Gt. Brit. Ireland* 1: 5. Great Britain.

Records.—Pangani; Bagamoyo; Kimbande; Zanzibar Island.)

Subgenus *PRAOMYS* Thomas. **Soft-furred Rats.**

1915. *Praomys* Thomas, *Ann. Mag. nat. Hist.* 15: 477, Dec. As a subgenus of *Epimys* Trouessart=*Rattus* G. Fischer; genotype, by original designation, *Epimys tullbergi* (Thomas).

RATTUS JACKSONI JACKSONI (de Winton)*. **Entebbe Soft-furred Rat.**

1897. *Mus jacksoni* de Winton, *Ann. Mag. nat. Hist.* 20: 318, Sept. Entebbe, north shore of Lake Victoria, Uganda Protectorate [0° 4' N., 32° 28' E., ca 3,800 feet].

Records.—Kibongoto; Bagiro, Morogoro.

* Considered by Ellerman (1941: 208) to be a subspecies of *Rattus tullbergi* (Thomas, 1894, *Ann. Mag. nat. Hist.* 13: 205, Feb.; Ankober River, Ashanti, Gold Coast) which, according to Hatt (1940b: 533), is itself a subspecies of *R. morio* (Trouessart, 1881, *Bull. Soc. Étud. sci. Angers* 10: 121; Cameroon Mt., British (Mandated) Cameroons).

RATTUS JACKSONI MELANOTUS (G. M. Allen and Loveridge). **Poroto Soft-furred Rat.**

1933. *Praomys tullbergi melanotus* G. M. Allen and Loveridge, *Bull. Mus. comp. Zool. Harv.* 75: 106, Feb. Nyamwanga, 6,400 feet, south slopes of Poroto Mts., Tanganyika Territory.

Records.—Kigogo; Madehani; Nyamwanga, Iloilo, Nkuka Forest.

RATTUS JACKSONI OCTOMASTIS (Hatt). **Mbulu Soft-furred Rat.**

1940. *Praomys jacksoni octomastis* Hatt, *Amer. Mus. Novit.* 1070: 2, 17 May. "Old Mbulu Reserve" (=Kainam), 6,000 feet, Mbulu District, Tanganyika Territory.

Record.—Known only from the type-locality.

RATTUS TAITAE (Heller). **Taita Soft-furred Rat.**

1912. *Epimys taitae* Heller, *Smithson. misc. Coll.* 59 (16): 9, 5 July. Mt. Mbololo, 5,000 feet, north end of Taita Hills, Kenya Colony [3° 18' S., 38° 37' E.].

Records.—Magroto; Kinole, Uluguru Mts.

Subgenus **HYLOMYS** Thomas. **Climbing Rats.**

1926. *Hylomyscus* Thomas, *Ann. Mag. nat. Hist.* 17: 178, Jan. Genotype, by original designation, *Epimys aeta* Thomas.

RATTUS CARILLUS WEILERI Lönnberg and Gyldenstolpe.

1925. *Rattus (Praomys) weileri* Lönnberg and Gyldenstolpe, *Ark. Zool.* 17 B (5): 3, 2 May. Burunga, 2,400 metres, west slopes of Mt. Mikeno, Mufumbira Range, Kivu District, Belgian Congo [1° 26' S., 29° 20' E.].

Records.—Vituri; Kigogo; Madehani.

Subgenus **MYOMYS** Thomas. **African Meadow Rats.**

1915. *Myomys* Thomas, *Ann. Mag. nat. Hist.* 16: 447, Dec. As a subgenus of *Epimys* Trouessart=*Rattus* G. Fischer; type, by original designation, *Epimys colonus* (A. Smith)=*Mus colonus* Brants.

RATTUS FUMATUS FUMATUS (Peters). **Ukamba Meadow Rat.**

1878. *Mus fumatus* Peters, *Mber. preuss Akad. Wiss., Berl.* 1878: 200. Ukamba, Kenya Colony.

Record.—Morogoro.

Subgenus **MASTOMYS** Thomas. **Shamba Rats, Multimammate Rats.**

1915. *Mastomys* Thomas, *Ann. Mag. nat. Hist.* 16: 477, Dec. As a subgenus of *Epimys* Trouessart=*Rattus* G. Fischer; type, by original designation, *Epimys coucha* (A. Smith).

RATTUS COUCHA* MICRODON (Peters). **Zambesi Shamba Rat.**

1852. *Mus microdon* Peters, *Reise Mossamb., Säugeth.*, p. 149, pl. 35, f. 5, 6; pl. 36, f. 1. Tete, south bank of Zambesi River, Boroma District, Portuguese East Africa [16° 9' S., 33° 36' E., 250 feet].

Records.—Mbanja; Kitaya; Masasi; Kimbande.

* *Mus natalensis* A. Smith (1834, *S. Afr. quart. J.* 2: 156, Feb.; about Durban, Natal), *Mus caffer* A. Smith (1834, *op. cit.* 2: 157, Feb.; "Cafferland", South Africa), and *Mus marikouensis* A. Smith (1836, *Rpt. Exp. C. Afr.*, p. 43; "the country beyond Kurrichaine," South Africa) are all earlier names for the Multimammate Rats than *Mus coucha* A. Smith (1836, *Rpt. Exp. C. Afr.*, p. 43; "the country between the Orange River and the Tropic" of Capricorn, South Africa). However, in view of the long-standing use of the name *coucha* for these rats, and in order to avoid confusion, this name is retained here. It is felt that a good case could be made out for suspending the Rules in favour of the more widely and commonly used *Rattus coucha* (A. Smith). Roberts (1944: 239) considered *R. coucha* (A. Smith) to be a synonym of *R. marikouensis* (A. Smith).

RATTUS COUCHA DURUMAE (Heller). Swahili Shamba Rat.

1912. *Epimys coucha durumae* Heller, *Smithson. misc. Coll.* 59 (16): 9, 5 July. Mazeras, 12 miles north-west of Mombasa, K'ifi District, Kenya Colony [3° 57' S., 39° 32' E., 530 feet].

Records.—Amani, Magroto, Tanga; Bumbuli.

RATTUS COUCHA HILDEBRANDTII (Peters). Taita Shamba Rat.

1878. *Mus Hildebrandtii* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1878: 200. Ndi, 12 miles north of Voi, Taita District, Kenya Colony [3° 14' S., 38° 30' E., 1,900 feet].

Records.—Kibongoto, Lyamungu; Engare Nanyuki, Longido.

RATTUS COUCHA VICTORIAE (Matschie)*. Usukuma Shamba Rat.

1911. *Mus (Epimys) microdon victoriae* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1911: 342, Oct. Mwanza, south shore of Lake Victoria, Tanganyika Territory.

Records.—Mantuyu; Bagiro, Bogoti, Mkarazi, Matomondo (Nguru), Mkindo River, Morogoro, Nyange, Tawa, Vituri; Ilonga, Kimamba, Mkata River, Rudewa; southern Masailand; Mpanira, Matomondo (Mpwapwa); near Mbulu; Barungi, Kondoa, Sandawe; Dodoma, Itiso; Iringa; Njombe; Ikoma; Koma, Mwanza, Ukerewe Island; Sanga, Zagayu; Shinyanga; Mansimba; Kakoma, Ugala River; Katavi Plain; Kasanga, Kitungulu, Mtumba, Sumbawanga.

RATTUS COUCHA ITIGIENSIS (Hatt)*. Turu Shamba Rat.

1935. *Mastomys coucha itigiensis* Hatt, *Amer. Mus. Novit.* 791: 3, 11 April. Ikungi (Gwao's), Singida District, Tanganyika Territory.

Records.—Ikungi, Msogaa, Ndogwe, Puma; Isikisia, Kigwa, Tabora.

Genus MUS Linnaeus.

1758. *Mus* Linnaeus, *Syst. Nat.*, ed. 10, 1: 59. Genotype *Mus musculus* Linnaeus.

1837. *Leggada* Gray, *Mag. nat. Hist.* 1: 586, Nov. Genotype *Leggada booduga* Gray.

Kiswahili: *panya*.

MUS MUSCULUS MUSCULUS Linnaeus. Common House Mouse.

1758. *Mus Musculus* Linnaeus, *Syst. Nat.*, ed. 10, 1: 62. Sweden.

Records.—Dar es Salaam; Pemba and, possibly, Zanzibar Islands.

The following seven species and subspecies of Pygmy Mice are often placed in the genus *Leggada* Gray. Thomas (1919: 419) considered that *Mus* and *Leggada* "are really distinct natural groups which it would be both convenient and true to nature to recognise as separate." Miller (1912: 863) has pointed out that there are no characters which distinguish *Leggada* from *Mus*, and this view is shared by Ellerman (1941: 240) and Hill and Carter (1941: 85). We incline to the latter view and regard *Leggada* as a strict synonym of *Mus*.

MUS TRITON MURILLUS (Thomas). Machakos Pygmy Mouse.

1910. *Leggada triton murilla* Thomas, *Ann. Mag. nat. Hist.* 5: 91, Jan. Machakos, 5,400 feet, in Ukamba, Kenya Colony [1° 32' S., 37° 16' E.].

Records.—Mombo; Kibongoto, Kilimanjaro 6,000 feet, Rombo; Dabaga, Kigogo, Luvuna; Madchani; Iloilo; Mtumba.

MUS BELLUS BELLUS (Thomas). Ukamba Pygmy Mouse.

1910. *Leggada bella* Thomas, *Ann. Mag. nat. Hist.* 5: 87, Jan. Machakos, 5,000 feet, in Ukamba, Kenya Colony [1° 32' S., 37° 16' E.].

Records.—Bagiro, Mkindo River, Morogoro, Nyange, Vituri; Kilosa; near Mbulu; Dodoma; Matomondo River (Mpwapwa); Dombolo; Njombe; Meswa, Nyegezi; Nyambiti; Zagayu; Igonda, Tabora.

* An examination of the material in the British Museum suggests that *R.c. victoriae* (Matschie) and *R.c. itigiensis* (Hatt) are synonymous with *R.c. microdon* (Peters).

MUS BELLUS VICINUS (Thomas). Coastal Pygmy Mouse.

1910. *Leggada bella vicina* Thomas, *Ann. Mag. nat. Hist.* 5: 88, Jan. Takaungu, 70 feet, Kilifi District, Kenya Colony [3° 42' S., 39° 52' E.].

Records.—Kilindi, Makakala; Dunda; Dar es Salaam; Mbanja; Kitaya, Mikindani.

MUS BELLUS INDUTUS (Thomas). Bechuanaland Pygmy Mouse.

1910. *Leggada bella induta* Thomas, *Ann. Mag. nat. Hist.* 5: 89, Jan. Malopo River, west of Morokwen, northern Cape Province, South Africa.

Records.—Ludilo; Njombe; Kasanga, Kitungulu.

MUS GERBILLUS (G. M. Allen and Loveridge). Ugogo Pygmy Mouse.

1933. *Leggada gerbillus* G. M. Allen and Loveridge, *Bull. Mus. comp. Zool. Harv.* 75: 112, Feb. Dodoma, in Ugogo, central Tanganyika Territory.

Record.—Known only from the type-locality.

MUS TENELLUS SUAHELICUS (Thomas). Swahili Pygmy Mouse.

1910. *Leggada tenella suahelica* Thomas, *Ann. Mag. nat. Hist.* 6: 312, Sept. Taveta, 2,500 feet, south-east of Kilimanjaro, Taita District, Kenya Colony [3° 25' S., 37° 40' E.].

Record.—Marangu.

MUS BIRUNGENSIS Lönnberg and Gyldenstolpe. Birunga Pygmy Mouse.

1925. *Mus birungensis* Lönnberg and Gyldenstolpe, *Ark. Zool.* 17 B (5): 5, 2 May. Mt. Mikeno, 3,400 metres, Birunga Volcanoes, Belgian Congo [1° 28' S., 29° 26' E.].

Record.—Kainam.

Genus LOPHUROMYS Peters. Harsh-furred Mice.

1866. *Lasiomys* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1866: 409, pl. f. 5-8. Genotype, by monotypy, *Lasiomys afer* Peters = ? *Mus sikapusi* Temminck. Not *Lasiomys* Burmeister, 1854, in *Mammalia* (Octodontidae).

1874. *Lophuromys* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1874: 234. Genotype *Lasiomys afer* Peters = ? *Mus sikapusi* Temminck. New name for *Lasiomys* Peters, preoccupied.

Kiswahili: *panya*.

LOPHUROMYS AQUILUS AQUILUS (True). Kilimanjaro Harsh-furred Mouse.

1892. *Mus aquilus* True, *Proc. U. S. nat. Mus.* 15: 460, text-f. 1, 26 Oct. Kilimanjaro, 8,000 feet, Moshi District, northern Tanganyika Territory.

Records.—Amani, Magroto; Bumbuli, Kizerui; Bismarck Hut, Kibongoto, Kilimanjaro, Shira Plateau at 11,500 feet; Bagiro, Mkindo River, Nyange, Nyingwa; rim of Ngorongoro Crater; Dabaga, Kigogo; Ukerewe Island; Madehani; Nkuka Forest; Igali.

LOPHUROMYS SIKAPUSI MANTEUFELI Matschie. Manteufel's Harsh-furred Mouse.

1911. *Lophuromys sikapusi manteufeli* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1911: 335, Oct. Mwanza, south shore of Lake Victoria, Tanganyika Territory.

1940. [*Lophuromys*] *muansae* Hatt, *Bull. Amer. Mus. nat. Hist.* 76: 492, 3 July. *Nomen nudum*; written in error for *L. s. manteufeli* Matschie, whose type-locality is Mwanza [*vide* Hatt, *in lit.*].

Records.—Amani; Ambangulu, west Usambara Mts.; Kinole, Uluguru Mts.; Dabaga; Mwanza.

LOPHUROMYS SIKAPUSI ANSORGEI de Winton. Nzoia Harsh-furred Mouse.

1896. *Lophuromys ansorgei* de Winton, *Proc. zool. Soc. Lond.* 1896: 607, pl. 27, Oct. Mumias, 20 miles north-west of Kakamega on the Nzoia River, North Kavirondo

District, Kenya Colony [0° 20' N., 34° 29' E., ca 4,200 feet].

Record.—Madehani*.

Genus *ACOMYS* I. Geoffroy. **Spiny Mice.**

1838. *Acomys* I. Geoffroy, *Ann. Sci. nat., Zool.* 10: 126, Aug. Genotype, by monotypy, *Mus cahirinus* Desmarest.

Kiswahili: *panya*.

ACOMYS cf *A. SELOUSI* de Winton. **Selous's Spiny Mouse.**

1897. *Acomys selousi* de Winton, *Proc. zool. Soc. Lond.* 1896: 807, pl. 40, f. 2, April. Essex Farm, Essex Vale, Matabeleland, Southern Rhodesia [ca 20° 20' S., 29° E., 3,800 feet].

Records.—Mkindo River; Mkata River; Manyoni.

ACOMYS WILSONI WILSONI Thomas. **Wilson's Spiny Mouse.**

1892. *Acomys Wilsoni* Thomas, *Ann. Mag. nat. Hist.* 10: 22, July. Mombasa, east coast of Kenya Colony [4° 3' S., 39° 40' E., sea-level].

Records.—Mkulumuzi Caves; Mgera; Lendanaï.

ACOMYS NUBILUS Dollman.

1914. *Acomys nubilus* Dollman, *Ann. Mag. nat. Hist.* 14: 486, Dec. Magadi, southern Masailand, Kenya Colony [1° 52' S., 36° 18' E., 3,000 feet].

Record.—Foot of Longido Mt.

ACOMYS cf *A. ALBIGENA* Heuglin. **White-cheeked Spiny Mouse.**

1877. *Acomys albigena* Heuglin, *Reise Nordost-Afr.* 2: 69. Bogos country, northern Eritrea.

Record.—Magroto.

Genus *SACCOSTOMUS* Peters†. **Pouched Mice.**

1846. *Saccostomus* Peters, *Ber. Verh. preuss. Akad. Wiss., Berl.* 1846: 258, Aug. Genotype, by monotypy, *Saccostomus campestris* Peters.

Kiswahili: *panya*.

SACCOSTOMUS CAMPESTRIS ELEGANS Thomas. **Nyasa Pouched Mouse.**

1897. *Saccostomus elegans* Thomas, *Proc. zool. Soc. Lond.* 1897: 431, 1 Oct. Karonga, north-east corner of Lake Nyasa, northern Nyasaland [9° 56' S., 33° 56' E., 1,600 feet].

Records.—Mpwapwa; Mizizikaunga; Zimba.

Genus *CRICETOMYS* Waterhouse‡. **Giant (Pouched) Rats.**

1840. *Cricetomys* Waterhouse, *Proc. zool. Soc. Lond.* 1840: 2, July. As a sub-genus of *Mus* Linnaeus; genotype, by original designation, *Cricetomys gambianus* Waterhouse.

Kiswahili: *buku*.

CRICETOMYS GAMBIANUS VIATOR Thomas. **Nyasa Giant Rat.**

1904. *Cricetomys gambianus viator*, Thomas *Ann. Mag. nat. Hist.* 13: 413, June. Likangala River, south-west of Lake Shirwa, Zomba District, Nyasaland [15° 25' S., 35° 30' E., ca 6,500 to 1,700 feet].

Records.—Madehani; Nkuka Forest; Mbeya; Kilinga Stream.

* Geographically this record, given by G. M. Allen and Loveridge (1933: 114), should be referred to *L.s. manteufeli* whose type-locality is intermediate between that of *L.s. ansorgei* and Madehani. It may be, however, as suggested by Allen and Loveridge (*loc. cit.*), that *manteufeli* is a synonym of *ansorgei* and it is perhaps best to record the identification given by those who examined the material until such a time as the relationship of these two races is worked out.

† Perhaps better classed as a member of the subfamily Dendromurinae [*sic* Simpson, 1945: 208].

‡ We have followed Ellerman's (1941: 286) grouping of the members of this genus under one species rather than Hart's (1940b: 493) subdivision of the genus into three species.

CRICETOMYS GAMBIANUS COSENSI Hinton. Zanzibar Giant Rat.

1919. *Cricetomys cosensi* Hinton, *Ann. Mag. nat. Hist.* 4: 286, Oct. Zanzibar Island. Records.—Pemba and Zanzibar Islands.

CRICETOMYS GAMBIANUS OSGOODI Heller. Swahili Giant Rat.

1912. *Cricetomys gambianus osgoodi* Heller, *Smithson. misc. Coll.* 59 (16): 16, 5 July. Mazeras, 12 miles north-west of Mombasa, Kilifi District, Kenya Colony [3° 57' S., 39° 32' E., ca 600 feet].

Records.—Amani; Kilimanjaro foothills, Lyamungu, Machame; Arusha; Bagiro, Kinole, Morogoro, Uluguru Mts; Kilosa; Farkwa; Itiso; Mafia Island (near *C. g. osgoodi*).

CRICETOMYS GAMBIANUS cf. C. G. PROPATOR Wroughton. Ruwenzori Giant Rat.

1910. *Cricetomys gambianus propator* Wroughton, *Ann. Mag. nat. Hist.* 5: 107, Jan. Mubuku Valley, 6,000 feet, east slopes of Mt. Ruwenzori, Toro District, Uganda Protectorate [0° 15' N; 30° 10' E.].

Record.—Bukoba; Kigoma.

Subfamily DENDROMURINAE G. M. Allen.

Genus DENDROMUS A. Smith.* African Tree Mice.

1829. *Dendromus* A. Smith, *Zool. J.* 4: 438, May. Genotype, by original designation, *Dendromus typus* A. Smith = *Mus mesomelas* Brants.

1830. *Dendromys* J. B. Fischer, *Synop. Anim., Add.*, p. 658. Substitute for *Dendromus* A. Smith.

1916. *Poëmys* Thomas, *Ann. Mag. nat. Hist.* 18: 238, Aug. As a subgenus of *Dendromus* A. Smith; type, by original designation, *Dendromus melanotis* A. Smith. Kiswahili: *panya miti*.

DENDROMUS MESOMELAS NYASAE Thomas.

1916. *Dendromus nyasae* Thomas, *Ann. Mag. nat. Hist.* 18: 241, Aug. Nyika Plateau, 6,500 feet, northern Nyasaland [between 10° and 11° S., and between 33° 30' and 34° 10' E.].

Records.—Kigogo; Madehani; Rungwe Mt.

DENDROMUS MESOMELAS HINTONI Bohmann.

1939. *Dendromus mesomelas hintoni* Bohmann, *Zool. Anz.* 127: 171, 15 Aug. Uluguru Mts., Morogoro District, Tanganyika Territory.

Records.—Morogoro, Nyingwa, Uluguru Mts.

DENDROMUS MESOMELAS KILIMANDJARI Bohmann.

1939. *Dendromus mesomelas kilimandjari* Bohmann, *Zool. Anz.* 127: 171, 15 Aug. Peters's Hut, 3,800 metres, south-east slopes of Kilimanjaro, Moshi District, Tanganyika Territory.

1942. *Dendromus mes[omelas] kilimandjari* Bohmann, *Zool. Anz.* 139: 45 (text-f. 3), 46 (text-f. 4), 1 Aug.

Record.—Known only from the type-locality.

DENDROMUS WHYTEI PALLESCENS Osgood.

1910. *Dendromus whytei pallescens* Osgood, *Field Mus. Publ., Zool.* 10: 7, 16 Feb. Lukenya Hill, Machakos District, Kenya Colony [1° 30' S., 37° 4' E., 5,000 to 6,029 feet].

Records.—Magroto; Mbanja.

DENDROMUS PUMILIO cf. D. P. PUMILIO (Wagner)†.

1841. *Dendromys pumilio* Wagner, *Münch. Gel. Anz.* 12: 437, 17 March; *Arch. Naturgesch.* 7 (1): 135. Cape Peninsula, Cape Province, South Africa.

Records. Tanga; southern Masailand between Mgera and Irangi; Kipera; Igonda; Bukoba.

* Shortly before going to press we located a copy of Bohmann's (1942) revision of the genus *Dendromus* A. Smith. We do not agree with some of Bohmann's conclusions and have decided not to adopt his arrangement of the genus until we have had more time to examine it in detail.

† Shortridge (1942: 90) treats *D. pumilio* (Wagner) as a subspecies of *D. mesomelas* (Brants, 1827, *Het Geslacht des Muizen*, p. 122; near Zondags (Sunday's) River, eastern Cape Province, South Africa).

DENDROMUS PUMILIO UTHMOELLERI Bohmann.

1939. *Dendromus pumilio uthmoelleri* Bohmann, *Zool. Anz.* 127: 170, 15 Aug. Bashai, 1,950 metres, Mbulu District, Tanganyika Territory.

Records.—Bashai, near Ufiome; Irangi.

DENDROMUS NYIKAE Wroughton.

1909. *Dendromus nyikae* Wroughton, *Ann. Mag. nat. Hist.* 3: 248, March. Nyika Plateau, northern Nyasaland [between 10° and 11° S., and between 33° 40' and 34° 10' E., 6,000 to 8,700 feet].

Record.—Ukerewe Island.

DENDROMUS NIGRIFRONS NIGRIFRONS (True).

1892. *Dendromys nigrifrons* True, *Proc. U. S. nat. Mus.* 15: 462, text-f. 2, 26 Oct. Kilimanjaro, 5,000 feet, northern Tanganyika Territory.

Record.—Kilimanjaro.

Genus STEATOMYS Peters. **Fat Mice.**

1846. *Steatomys* Peters, *Ber. Verh. preuss. Akad. Wiss., Berl.* 1846: 258, Aug. Genotype, by monotypy, *Steatomys pratensis* Peters.

Kiswahili: *panya*.

STEATOMYS LOVERIDGEI Thomas. **Loveridge's Fat Mouse.**

1919. *Steatomys loveridgei* Thomas, *Ann. Mag. nat. Hist.* 4: 33, July. Lumbo, mainland opposite Mozambique Island, Portuguese East Africa [15° 1' S., 40° 40' E., sea-level].

Records.—Misinko; Puma.

STEATOMYS MUANZAE Kershaw. **Usukuma Fat Mouse.**

1923. *Steatomys muanzae* Kershaw, *Ann. Mag. nat. Hist.* 12: 535, Oct. Nyambiti, in Usukuma, Kwimba District, Tanganyika Territory.

Records.—Kondoa; Mwapwa; Zagayu; Nyambiti; Igonda; Mizizikaunga.

Subfamily OTOMYINAE Thomas. **Groove-toothed Rats.**

Kiswahili: *panya*.

Genus OTOMYS F. Cuvier. **Swamp Rats.**

1823. *Otomys* F. Cuvier, *Dents Mamm.*, p. 168, pl. 60; 1824, *op. cit.*, p. 255*. Genotype, by subsequent designation (W. L. Sclater, 1899, *Ann. S. Afr. Mus.* 1: 195, March), *Otomys irroratus* (Brants).

1918. *Anchotomys* Thomas, *Ann. Mag. nat. Hist.* 2: 204, 208, Sept. As a sub-genus of *Otomys* F. Cuvier; type, by monotypy and original designation, *Euryotis anchietae* Bocage.

OTOMYS ANCHIETAE LACUSTRIS G. M. Allen and Loveridge. **Ukinga Swamp Rat.**

1933. *Otomys (Anchotomys) anchietae lacustris* G. M. Allen and Loveridge, *Bull. Mus. comp. Zool. Harv.* 75: 120, 7 Feb. Madehani, 7,200 feet, Livingstone Mts., Njombe District, Tanganyika Territory.

Records.—Dabaga; Madehani, Tandala; Iloilo; Igali; Mtumba.

OTOMYS TYPUS ZINKI Bohmann. **Bohmann's Swamp Rat.**

1943. *Otomys typus zinki* Bohmann, *Zool. Anz.* 143: 153, 15 Aug. Peters's Hut, 3,800 metres, Kilimanjaro, northern Tanganyika Territory.

Record.—Apparently known only from the type-locality.

* Cuvier mentioned no specific names in connection with his new genus *Otomys* and it would appear to be a *genus caelebs*. The use of the word on p. 168 is probably vernacular, while plate 60 has no title though it is thought to portray the teeth of the animal later named *Euryotis irrorata* by Brants. However, we are retaining it as a valid name for the members of this group on account of its long usage and general acceptance.

OTOMYS PERCIVALI Dollman. Percival's Swamp Rat.

1915. *Otomys percivali* Dollman, *Ann. Mag. nat. Hist.* 15: 151, 168, Jan. Twelve miles south of Lake Ol Bolossat, 8,700 feet, Naivasha District, Kenya Colony [0° 6' S., 36° 24' E.].

Record.—Kigogo.

OTOMYS ANGONIENSIS ELASSODON Osgood. Rift Valley Swamp Rat.

1910. *Otomys angoniensis elassodon* Osgood, *Field. Mus. Publ., Zool.* 10: 10, 16 Feb. Naivasha, Rift Valley, Kenya Colony [0° 43' S., 36° 25' E., ca 6,300 feet].

Records.—Kilimanjaro, Lyamungu, Rombo, Shira Plateau up to 12,500 feet; south foot of Losimingur Mt.; Dabaga, Iringa, Rumuli.

OTOMYS DIVINORUM Thomas. Kilimanjaro Swamp Rat.

1910. *Otomys divinorum* Thomas, *Ann. Mag. nat. Hist.* 6: 311, Sept. Rombo, 5,300 feet, south-east slopes of Kilimanjaro, northern Tanganyika Territory.

Record.—Rombo.

OTOMYS KEMPI Dollman. Kemp's Swamp Rat.

1915. *Otomys kempi* Dollman, *Ann. Mag. nat. Hist.* 15: 152, Jan. Burunga, 6,000 feet, west slopes of Mt. Mikenno, Mufumbiro Range, Belgian Congo [1° 26' S., 29° 20' E.].

Record.—Nyingwa.

OTOMYS DENTI SUNGAE Bohmann. Usambara Swamp Rat.

1943. *Otomys denti sungae* Bohmann, *Zool. Anz.* 143: 154, 15 Aug. Sunga, 1,900 metres, north end of Usambara Mts., Lushoto District, Tanganyika Territory.

Record.—Apparently known only from the type-locality.

Subfamily CRICETINAE Murray.

Genus MYSTROMYS Wagner.

1841. *Mystromys* Wagner, *Münch. Gel. Anz.* 12: 434, 17 March; *Arch. Naturgesch.* 7 (1): 132. Genotype, by monotypy, *Mystromys albipes* Wagner=*Otomys albicaudatus* A. Smith.

MYSTROMYS LONGICAUDATUS Noack.

1887. *Mystromys longicaudatus* Noack, *Zool. Jb.* 2: 246, pl. 9, f. 16-18, 7 May. Igonda, 37 miles south of Tabora, Tanganyika Territory.

Record.—Known only from the type-locality.

Subfamily TACHYORYCTINAE Miller and Gidley.

Genus TACHYORYCTES Rüppell. "Mole"-rats.

1835. *Tachyoryctes* Rüppell, *N. Wirbelth. Fauna Abyss., Säugeth.*, p. 35, footnote. Genotype, by monotypy, *Bathyergus splendens* Rüppell.

Kiswahili: *fuko*.

TACHYORYCTES ANKOLIAE Thomas. Ankole Mole-rat.

1909. *Tachyoryctes ankoliae* Thomas, *Ann. Mag. nat. Hist.* 4: 545, Dec. Burumba, 5 miles north-east of the Kagera River at Nsongezi, Ankole District, Uganda Protectorate [0° 58' S., 30° 50' E., 1,580 metres.]

Record.—Bukoba.

TACHYORYCTES DAEMON Thomas. Kilimanjaro Mole-rat.

1909. *Tachyoryctes daemon* Thomas, *Ann. Mag. nat. Hist.* 4: 545, Dec. Kilimanjaro, 5,000 feet, northern Tanganyika Territory.

Records.—Old Moshi, Kibongoto, Laitokitok, Lyamungu, Kilimanjaro, Marangu, Rombo; Arusha, Engare Olmotoni, Mt. Meru at upper limits of rain-forest, 4,000 metres; Banagi; Nyakahanga, Ruandalo.

Subfamily GERBILLINAE Alston. **Gerbils.**

Genus GERBILLUS Desmarest.

1804. *Gerbillus* Desmarest, *Nouv. Dict. Hist. nat.* 24 (Tab. méth.): 22. Genotype *Gerbillus aegyptius* Desmarest=*Dipus gerbillus* Olivier.

Subgenus DIPODILLUS Lataste. **Pygmy Gerbils.**

1881. *Dipodillus* Lataste, *Le Naturaliste* 1: 506, 15 Nov; 1882, *op. cit.* 2: 12, 15 Jan. As a subgenus of *Gerbillus* Desmarest; type *Gerbillus simoni* Lataste.

GERBILLUS HARWOODI LUTEUS (Dollman). **Masai Pygmy Gerbil.**

1914. *Dipodillus luteus* Dollman, *Ann. Mag. nat. Hist.* 14: 489, Dec. Loita Plains, 6,500 feet, Southern Uaso Nyiro, Masai District, Kenya Colony.

Records.—Gulwe; Dodoma; Ikungi, Misinko, Msogaa, Puma, Urugu, Uho'a; Zagayu; Nyambiti; Usongo, Simbo.

GERBILLUS PUSILLUS Peters. **Taita Pygmy Gerbil.**

1878. *Gerbillus pusillus* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1878: 201. Ndi, 13 miles north of Voi, Taita District, Kenya Colony [$3^{\circ} 14' S.$, $38^{\circ} 30' E.$, 1,900 feet] [*vide* Moreau, Hopkins and Hayman, 1946: 418].

Records.—Kilonito; Barungi, Sandawe; Itiso.

Genus TATERA Lataste*. **Gerbils.**

1882. *Tatera* Lataste, *Le Naturaliste* 2: 126, 15 Aug. As a subgenus of *Gerbillus* Desmarest; genotype, by original designation, *Dipus indicus* Hardwicke.

Subgenus TATERA Lataste.

TATERA ROBUSTA SWAYTHLINGI (Kershaw). **Swaythling's Gerbil.**

1921. *Taterona swaythlingi* Kershaw, *Ann. Mag. nat. Hist.* 8: 565, Nov. Morogoro, northern foot of Uluguru Mts., Tanganyika Territory.

Records.—Dakawa, Morogoro; Chanzuru, Ilonga, Kilosa, Kimamba, Mamboya; Ikikuyu, Pwaga; Dodoma; Tashmata Bridge.

TATERA ROBUSTA VICINA (Peters). **Ukamba Gerbil.**

1878. *Gerbillus vicinus* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1878: 200. Kitui, in Ukamba, Kitui District, Kenya Colony [$1^{\circ} 22' S.$, $38^{\circ} 1' E.$, 3,500 feet].

Record.—Engare Nanyuki.

TATERA ROBUSTA MUANSAE (Matschie). **Usukuma Gerbil.**

1911. *Gerbillus (Tatera) vicinus muansae* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1911: 333, Oct. Mwanza, south shore of Lake Victoria, Tanganyika Territory.

Records.—Mgera; Chanzuru, Kimamba, Mbala, Ulaya; Kibaya; Sandawe; Itiso; Ibunua, Puma, Ruruma; Banagi; Zagayu; Mwanza.

TATERA SCHINZI LOVERIDGEI Hatt. **Loveridge's Gerbil.**

1935. *Tatera nyassae loveridgei* Hatt, *Amer. Mus. Novit.* 791: 2, 11 April. Kilosa, Tanganyika Territory.

Record.—Known only from the type-locality.

TATERA LEUCOGASTER COSENSI (Kershaw). **Cosens's Gerbil.**

1921. *Taterona cosensi* Kershaw, *Ann. Mag. nat. Hist.* 8: 567, Nov. Vihingo, 8 miles south of Ruvu Station, Uzaramo District, eastern Tanganyika Territory.

Records.—Kiserawe, Vihingo; Morogoro; Kisanga, Tendigo; Mbanja; Kitaya; Masasi; Mugombia; Iringa; Njombe.

* Davis's (1949:1002) recent regrouping of the genus *Tatera* is here adopted.

TATERA LEUCOGASTER TABORAE (Kershaw). Unyamwezi Gerbil.

1921. *Taterona taborae* Kershaw, *Ann. Mag. nat. Hist.* 8: 566, Nov. Tabora, in Unyanyembe, western Tanganyika Territory.

Records.—Isikisia, Tabora; Sumbawanga.

Subgenus **GERBILLISCUS** Thomas.

1897. *Gerbilliscus* Thomas, *Proc. zool. Soc. Lond.* 1897: 433, 1 Oct. Genotype, by original designation, *Gerbillus böhmii* Noack.

TATERA BOHMI V. R'A Heller. Masai Gerbil.

1910. *Tatera varia* Heller, *Smithson. misc. Coll.* 56 (9): 1, pl. 1, 4 f., 22 July. Loletai Plains, near Southern Uaso Nyiro, Masai District, Kenya Colony [ca 1° 10' S., 35° 50' E., 6,000 feet].

Records.—Dabaga, Iringa; Njombe; Tabora; Ukerewe Island; Bukoba.

Order **CARNIVORA** Bowdich.Superfamily **CANOIDEA** Simpson.Family **CANIDAE** Gray. **Dogs, Jackals, Foxes.**Subfamily **CANINAE** Gill.Genus **CANIS** Linnaeus. **True Dogs, Jackals.**

1758. *Canis* Linnaeus, *Syst. Nat.*, ed. 10, 1: 38. Genotype *Canis familiaris* Linnaeus.

1816. *Thos* Oken, *Lehrb. Naturgesch.* 3 (2): 1037. Genotype, by subsequent designation (Heller, 1914, *Smithson. misc. Coll.* 63 (7): 1-3, 24 June), *Thos vulgaris* Oken = *Canis aureus* Linnaeus.

Kiswahili: Dogs, *mbwa*; Jackals, *bwela*.

(CANIS FAMILIARIS Linnaeus. Domesticated Dog.

1758. *Canis familiaris* Linnaeus, *Syst. Nat.*, ed. 10, 1: 38. Upsala, Sweden. *Status*.—Generally distributed in a domestic state in suitable localities. The presence of tsetse-flies (*Glossina* spp.) is a limiting factor in the distribution of this species, as it is with most forms of domestic animals.)

CANIS AUREUS BEA (Heller). East African Golden Jackal.

1914. *Thos aureus bea* Heller, *Smithson. misc. Coll.* 63 (7): 2, 5, 24 June. Loita Plains, between Amala River and Southern Uaso Nyiro, Masai District, Kenya Colony.

Records.—Engare Nairobi, Kibongoto; Engare Nanyuki; Kitete; Serengeti Plains, Lake Magadi, Olduwai, Seronera River.

CANIS ADUSTUS NOTATUS (Heller). East African Side-striped Jackal.

1914. *Thos adustus notatus* Heller, *Smithson. misc. Coll.* 63 (7): 2, 4, 24 June. Loita Plains, between Amala River and Southern Uaso Nyiro, Masai District, Kenya Colony.

Records.—Engare Nairobi, Kibongoto, Lyamungu, Moshi, Old Moshi; Arusha; Kibaya; Morogoro; Basotu, Ghatesh, Mt. Hanang, Ndareda; Itiso, Dodoma; Rungwa, Ushilo; between Durumo and Chulo Rivers, Uliampiti; Olduwai; upper Grumeti River, Ikoma, Serengeti Plains; Mwanza; Shinyanga; between Kipembawe and Rungwa, Makongolozzi, Mawoga; Nakachese, Mbeya Mt.; generally distributed in Kilwa, Liwale, Lindi, Mikindani, Newala, Masasi, Tunduru and Songea Districts.

CANIS MESOMELAS MCMILLANI (Heller). East African Black-backed Jackal.

1914. *Thos mesomelas mcmillani* Heller, *Smithson. misc. Coll.* 63 (7): 3, 6, 24 June. Mito Andei, 2,500 feet, 15 miles south-east of Kibwezi, Machakos District, Kenya Colony [2° 43' S., 38° 10' E.].

Records.—Foothills of Kilimanjaro west of Laitokitok; Arusha; Morogoro; Mkata River; Kibaya, Lolikale; Mang'ati Plains, Umlugwe; Kondoa, Sambala, Sandawe; Gulwe, Mpwapwa, Zoisa; Dodoma; Ikungi, Mkalama, Msingi, Sana; Makasuku, Mikwesi; Mufindi; Njombe; Ilolo, Nyamwanga; Ol Balbal, Olduwai; Moru, Serengeti Plains; Zagayu; Shinyanga; Tabora, Ugala River; Lupa Bridge, Ngomba River; Kalambo River.

Subfamily SIMOCYONINAE Zittel.

Genus LYCAON Brookes. **African Wild Dogs.**

1827. *Lycaon* Brookes, in Griffith's Cuvier, *Anim. Kingd.* 5: 151. Genotype *Canis (Lycaon) tricolor* Brookes=*Hyaena picta* Temminck.

Kiswahili: *mbwa mwaivu*.

LYCAON PICTUS LUPINUS Thomas. **East African Wild Dog.**

1902. *Lycaon pictus lupinus* Thomas, *Ann. Mag. nat. Hist.* 9: 439, June. Molo (Nyuki) River swamp, 2,000 metres, Rift Valley, Nakuru District, Kenya Colony [*vide* Moreau, Hopkins and Hayman, 1946: 408].

Records.—Fairly generally distributed in Bagamoyo, Uzaramo, Kilosa, Kilwa, Liwale, Lindi, Mikindani, Newala, Masasi, Tunduru, Songea, Arusha, Masai, Kondoa, Mpwapwa, Dodoma, Manyoni, Musoma, Maswa, Mwanza, Biharamulo, Shinyanga, Tabora, Kahama, Kigoma, Ufipa, Chunya and Mbeya Districts.

Subfamily OTOCYONINAE Trouessart.

Genus OTOCYON Müller. **"Bat"-eared Foxes**

1836. *Otocyon* J. Müller, *Arch. Anat. Physiol. Berl.* 1836: L. Genotype, by monotypy, *Otocyon caffer* Lichtenstein=*Canis megalotis* Desmarest.

OTOCYON MEGALOTIS VIRGATUS Miller. **East African Bat-eared Fox.**

1909. *Otocyon virgatus* Miller, *Smithson. misc. Coll.* 52: 485, pl. 60-62, 18 Dec. Naivasha Station, Rift Valley, Kenya Colony [0° 43' S., 36° 25' E., ca 6,300 feet].

Records.—Same; Arusha Chini; Kondoa; Kirurumo, Konko, Manyoni, Mgandu, Saranda; near Ikungi, Misinko, Nshinshi; Sanya Plains, Ol Balbal, Olduwai, Kitete; Banagi; Serengeti Plains, Seronera River; Zagayu; Shinyanga; Isikisia; Mbeya, Ntungu.

Family MUSTELIDAE Swainson.

Subfamily MUSTELINAE Gill.

Kiswahili: *kicheche*.

Genus ICTONYX Kaup. **African Polecats, Zorillas, Stink Muishonds.**

1816. *Zorilla* Oken, *Lehrb. Naturgesch.* 3 (2): xi, 999, 1000 (here spelt "*Zorille*"). Genotype, by tautonymy, *Viverra zorilla* Erxleben. *Zorilla* is possibly a *nomen vanum* and is here dropped in favour of the commonly used *Ictonyx* Kaup [*vide* Howell, 1906, *Proc. biol. Soc. Wash.* 19: 46, 26 Feb.].

1835. *Ictonyx* Kaup, *Das Thierr.* 1: 352. Genotype, by monotypy, *Ictonyx capensis* Kaup=*Bradypus striatus* Perry.

ICTONYX STRIATUS ALBESCENS Heller. **East African Polecat.**

1913. *Ictonyx capensis albescens* Heller, *Smithson. misc. Coll.* 61 (13): 13, 16 Sept. Summit of Mt. Lololokwi, Laikipia-Samburu District, Kenya Colony [0° 50' N., 37° 30' E., ca 4,000 feet].

Records.—Liwale, Makata; Lindi; foothills of Kilimanjaro; Barungi; Ushora; Igonda, Msima River, Tabora; Bukoba.

Genus POECILOGALE Thomas. **African Striped Weasels, Snake Muishonds.**

1883. *Poecilogale* Thomas, *Ann. Mag. nat. Hist.* 11: 370, 1 May. Genotype, by monotypy and original designation, *Zorilla albinucha* Gray.

POECILOGALE ALBINUCHA DOGGETTI Thomas and Schwann. **Ankole Snake Muishond.**

1904. *Poecilogale doggetti* Thomas and Schwann, *Abstr. Proc. zool. Soc. Lond.*, no. 6, p. 22, 26 April; *Proc. zool. Soc. Lond.* 1904 (1): 460, 2 Aug. Burumba, 5 miles north-east of the Kagera River at Nsongezi, Ankole District, Uganda Protectorate [0° 58' S., 30° 50' E., ca 5,000 feet].

Records.—Bukoba; Tabora; Poroto Mts.

Subfamily MELLIVORINAE Gill. **Ratels.**Genus MELLIVORA Storr*. **Honey Badgers, Ratels.**

1780. *Mellivora* Storr, *Prod. meth. Mammal.*, p. 34, tab. A, July. Genotype, by indication†, *Viverra ratel* Sparrman=*Viverra capensis* Schreber.

Kiswahili: *nyegere*.

MELLIVORA CAPENSIS SAGULATA Hollister. **East African Honey Badger.**

1910. *Mellivora sagulata* Hollister, *Smithson. misc. Coll.* 56 (13): 2, 10 Oct. Kilimanjaro, 5,000 feet, northern Tanganyika Territory.

Records.—Ubiquitous in suitable localities.

Subfamily LUTRINAE Baird.

Kiswahili: *fisi maji*.

Genus LUTRA Brisson. **Otters.**

1762. *Lutra* Brisson, *Regn. Anim.*, ed. 2, pp. 13, 201. Genotype, by tautonymy and subsequent designation (Merriam, 1895, *Science* 1: 376, 5 April), *Lutra lutra* Brisson (" *Lutra castanei coloris* . . . La Loutre ") = *Mustela lutra* Linnaeus.

1772. *Lutra* Brännich, *Zool. Fundam.*, pp. 34, 42, 43. No genotype or trivial name mentioned but, by tautonymy, it may be presumed to be *Mustela lutra* Linnaeus.

Subgenus HYDRICTIS Pocock.

1865. *Hydrogale* Gray, *Proc. zool. Soc. Lond.* 1865: 131, f. (skull), June. Genotype by monotypy, *Lutra maculicollis* Lichtenstein. Not *Hydrogale* Kaup, 1829, in *Mammalia* (Soricidae).

1921. *Hydrictis* Pocock, *Proc. zool. Soc. Lond.* 1921: 543, 9 Sept. Genotype *Lutra maculicollis* Lichtenstein. New name for *Hydrogale* Gray, preoccupied.

LUTRA MACULICOLLIS Lichtenstein. **Spotted-necked Otter.**

1835. *Lutra maculicollis* Lichtenstein, *Arch. Naturgesch.* 1 (1): 89, pl. 2, f. 1. Bamboo Mts., Orange River, Cape Province, South Africa [*vide* Shortridge, 1934: 187].

Records.—We have seen no published records of the occurrence of this otter in Tanganyika though it does occur. Mr. C. J. P. Ionides records it (*in litt.*) from Mbamba Bay, Lake Nyasa.

* " *Mellivora* " G. Edwards (in Catesby, 1771, *Hist. nat. Carol.* 1: 65, pl. 65; Catalogue, p. 2) is not a technical name and does not preoccupy *Mellivora* Storr. In this connection, see also *Opin. int. Comm. zool. Nom.* no. 89.

† Storr specified no genotype by name but referred in a footnote to " Act. Holm. 1777, t. 4, f. 3. " This refers to the figure accompanying the description of *Viverra ratel* Sparrman, the modern version of the reference being: 1777, *K. svenska VetenskAkad. Handl.* 38: 147, pl. 4, f. 3.

Genus AONYX Lesson. **African Clawless Otters.**

1827. *Aonyx* Lesson, *Man. Mamm.*, p. 157, May. Genotype, by monotypy, *Aonyx delalandi* Lesson = *Lutra capensis* Schinz.

AONYX CAPENSIS HELIOS Heller. **Sotik Clawless Otter.**

1913. *Aonyx capensis helios* Heller, *Smithson. misc. Coll.* 61 (19): 1, 8 Nov. Sotik area between Kisii and Kericho, South Kavirondo District, Kenya Colony [ca 0° 30' S., 35° E.].

Records.—Kingoni; Bagiro, Bunduki; Tendigo; Wandawewe Hills; Dongobesh; Lake Victoria; Karagwe; Lake Rukwa, upper Lupa River, Sira River; Igali, Kantesya River, Mbozi; Lake Tanganyika, Ifume River, Kalambo River.

Superfamily FELOIDEA Simpson.

Family VIVERRIDAE Gray.

Subfamily VIVERRINAE Gill.

Genus GENETTA Oken. **Genets.**

1816. *Genetta* Oken, *Lehrb. Naturgesch.* 3 (2): 1010. As a subgenus of *Viverra* Linnaeus; genotype, by tautonymy, *Viverra genetta* Linnaeus. Not a generic name, according to Sherborn (1922-32: 2656).

1816. *Genetta* G. Cuvier, *Règne Anim.* 1: 156, Dec.* As a subgenus of *Viverra* Linnaeus; genotype, by monotypy and tautonymy, *Viverra—genetta* Linnaeus.

Kiswahili: *kanu*.

GENETTA GENETTA NEUMANNI Matschie. **Neumann's Genet.**

1902. [*Genetta*] *neumanni* Matschie, *Verh. int. zool. Congr. Berl.* 1901: 1140. Irangi, Kondoa District, central Tanganyika Territory [*vide* Hollister, 1918: 118].

Records.—Mto wa Mbu; Babati, Ndareda; Irangi, Kondoa; Kidenge; Dodoma, Itiso; Itumba; Misinko, Ndogwe, Nshinshi, Singida, Suna; Mwagala; Isikisia; Itewe, Mizizikaunga, Ntumbi, Zongwe Hill.

GENETTA GENETTA cf G. G. PULCHRA Matschie.

1902. [*Genetta*] *pulchra* Matschie, *Verh. int. zool. Congr. Berl.* 1901: 1139. Okavango (Cubango) River, South West Africa (*vide* Shortridge, 1935, *Mamm. S.W. Afr.* 1: 112).

Record.—Murembwi River.

GENETTA TIGRINA MOSSAMBICA Matschie. **Mozambique Bush Genet.**

1902. [*Genetta*] *mossambica* Matschie, *Verh. int. zool. Congr. Berl.* 1901: 1138. Mossimboa, north-east coast of Portuguese East Africa [11° 20' S., 40° 22' E., sea-level] [*vide* Moreau, Hopkins and Hayman, 1946: 409].

Records.—"Southern Tanganyika" (G. M. Allen, 1939: 203); generally but sparsely distributed throughout the Southern Province; Nchingidi.

GENETTA TIGRINA SUAHELICA Matschie. **Swahili Bush Genet.**

1902. [*Genetta*] *suaelica* Matschie, *Verh. int. zool. Congr. Berl.* 1901: 1143. Tanga, north-east coast of Tanganyika Territory [*vide* Hollister, 1918: 120].

Records.—Tanga; Manja, Pangani; Mt. Lutindi; Lyamungu, Kibongoto, Kilimanjaro, near Marangu; Kanga; Kilosa, Kimamba, Malolo, Mkata River; Ibumua Misinko; Gongwe; Namanyere.

* Though dated 1817, this volume was published in December, 1816 [*vide* Sherborn, 1922-32: xli.].

GENETTA TIGRINA STUHLMANNI Matschie. **Bukoba Bush Genet.**

1902. *G[enetta] stuhlmanni* Matschie, *Verh. int. zool. Congr. Berl.* 1901: 1142. Bukoba, west shore of Lake Victoria, north-west Tanganyika Territory.

Records.—Serengeti Plains; Zagayu; Bukoba; Dabaga*.

Genus VIVERRICULA Hodgson. **Rasse.**

1838. *Viverricula* Hodgson, *Ann. Mag. nat. Hist.* 1: 152, April. Genotype *Civetta indica* E. Geoffroy.

(VIVERRICULA INDICA RASSE (Horsfield).)

1823. *Viverra rasse* Horsfield, *Zool. Res. Java.* no. 6, pl. 18 and text, April†. Java, East Indies.

Status.—Introduced into Pemba and Zanzibar Islands.)

Genus CIVETTICTIS Pocock. **African Civets.**

1915. *Civettictis* Pocock, *Proc. zool. Soc. Lond.* 1915: 134, 26 March. Genotype, by original designation, *Viverra civetta* Schreber.

Kiswahili: *fungo*.

CIVETTICTIS CIVETTA CIVETTA (Schreber).

1776. *Viverra Civetta* Schreber, *Säugeth.* 3: pl. cxi; 1777, *op. cit.* 3: 418. French Guinea.

1891. *Viverra civetta orientalis* Matschie, *Arch. Naturgesch.* 57 (1): 352, Oct. Zanzibar. Not *Viverra orientalis* Hodgson, 1842=*V. zibetha* Linnaeus.

1929. *Civettictis civetta schwarzi* Cabrera, *Mem. Soc. esp. Hist. nat.* 16: 36, footnote, 10 July. Zanzibar [*vide* Schwarz, 1934, *Ann. Mag. nat. Hist.* 14: 261, Aug.]. New name for *Viverra c. orientalis* Matschie, preoccupied.

Records.—Ubiquitous in suitable localities. Found on Zanzibar Island; absent from Pemba and Mafia Islands.

Subfamily PARADOXURINAE Gill.

Genus NANDINIA Gray. **African Palm Civets, Tree Civets.**

1843. *Nandinia* Gray, *List Spec. Mamm. Coll. Brit. Mus.*, p. 54, 13 May; 1865, *Proc. zool. Soc. Lond.* 1864: 529, May. Genotype, by monotypy and original designation, *Viverra binotata* Reinwardt.

NANDINIA BINOTATA cf N. B. ARBOREA Heller. **Kakamega Tree Civet.**

1913. *Nandinia binotata arborea* Heller, *Smithson. misc. Coll.* 61 (13): 9, 16 Sept. Lukose River, in the Kakamega Forest, North Kavirondo District, Kenya Colony.

Records.—Mombo; Kibongoto, Kilimanjaro; forest on Mt. Meru; Bagiro.

NANDINIA BINOTATA cf N. B. GERRARDI Thomas. **Nyasaland Tree Civet.**

1893. *Nandinia gerrardi* Thomas, *Ann. Mag. nat. Hist.* 12: 205, Sept. Lower Shire River, southern Nyasaland.

Records.—Southern Uhehe; Lupembe, Madehani, Nyama River; Nkuka Forest.

* Possibly referable to *G.t. suahelica* (record given by G. M. Allen and Loveridge, 1933: 74), or, alternatively, the Kigoma and Ufipa records given under *G.t. suahelica* may be better placed under this race.

† For the date of publication of this work see Richmond, in Matthews, 1919, *Birds of Australia* 7: 475.

Subfamily HERPESTINAE Gill. Mongooses, Mierkats.

Kiswahili: *nguchiro*.

Genus HERPESTES Illiger.

1799. *Ichneumon* Lacepède, *Tabl. Mammif.*, p. 7. Genotype, by monotypy, *Ichneumon pharaon* Lacepède = *Viverra ichneumon* Linnaeus. Not *Ichneumon* Linnaeus, 1758, in Hymenoptera.

1811. *Herpestes* [sic] Illiger, *Prod. Syst. Mamm. Av.*, p. 135; corrected to *Herpestes* in "Errata et Omissa," p. 302. Genotype, by subsequent designation (Anderson, 1878, *Anat. zool. Res. Exped. Yunnan*, p. 171), *Herpestes ichneumon* (Linnaeus).

Subgenus HERPESTES Illiger. Greater Grey Mongooses.

(HERPESTES JAVANICUS AUROPUNCTATUS (Hodgson)).

1836. *Mangusta Auropunctata* Hodgson, *J. Asiat. Soc. Beng.* 5: 235. Nepal.
Status.—Introduced into Mafia Island.)

HERPESTES ICHNEUMON FUNESTUS (Osgood).

1910. *Mungos ichneumon funestus* Osgood, *Field Mus. Publ., Zool.* 10: 17, 7 April. Naivasha, Rift Valley, Kenya Colony [0° 43' S., 36° 23' E., ca 6,300 feet].

Records.—Kilosa; Migeregere; near Lindi; Nanyamba; Kibongoto, foothills of Kilimanjaro; Mpwapwa; Manyoni, Ndaburo; Mkalama; Tabora; Madehani; near Tunduma.

Subgenus MYONAX Thomas. Lesser Mongooses.

1928. *Myonax* Thomas, *Ann. Mag. nat. Hist.* 2: 408, Nov. Genotype, by original designation, *Herpestes gracilis* Rüppell.

HERPESTES CONRADSI (Matschie).

1914. *Calogale conradsi* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1914: 454, Dec. Ukerewe Island, south end of Lake Victoria, Tanganyika Territory.

Record.—Known only from the type-locality.

HERPESTES DENTIFER (Heller).

1913. *Mungos dentifer* Heller, *Smithson. misc. Coll.* 61 (13): 10, 16 Sept. Maji ya Chumvi, Kwale District, Kenya Colony [3° 47' S., 39° 23' E., 540 feet].

Record.—Nyange.

HERPESTES EMINI (Matschie.)

1914. *Calogale emini* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1914: 452, Dec. Bukoba, west shore of Lake Victoria, north-west Tanganyika Territory.

Record.—Bukoba.

HERPESTES FLAVIVENTRIS (Matschie).

1914. *Calogale flaviventris* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1914: 454, Dec. Chamliho Hill, Musoma District, Tanganyika Territory.

Records.—Dodoma; Banagi, Chamliho Hill; Mwanza; Zagayu.

HERPESTES GRANTII (Gray).

1864. *Herpestes badius* P. L. Sclater, *Proc. zool. Soc. Lond.* 1864: 100, July. "Mgunda Mkali." Not *Herpestes badius* A. Smith, 1838.

1865. *Calogale grantii* Gray, *Proc. zool. Soc. Lond.* 1864: 561, May. Itigi Thicket (Mgunda Mgali) south of the Central Railway, between Mabungulo and the Chona River, Manyoni District, Tanganyika Territory.

Records.—Mpanira; Itiso, Ugogo; Itigi Thicket; Msogaa, Ushora; Kigogo.

HERPESTES LADEMANNI (Matschie).

1914. *Calogale lademanni* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1914: 441, Dec. Bubu River west of Kondo, central Tanganyika Territory.

Records.—Bubu River; Dodoma; Mkalama, Msogaa, Nshinshi.

HERPESTES SANGUINEUS PROTEUS (Thomas).

1907. *Mungos gracilis proteus* Thomas, *Ann. Mag. nat. Hist.* 19: 119, Jan. Mubuku Valley, 7,000 feet, east slopes of Mt. Ruwenzori, Toro District, Uganda Protectorate [0° 15' N., 30° 10' E.].

Records.—Dabaga; Igali; Bukoba.

HERPESTES SANGUINEUS IBEAE (Wroughton).

1907. *Mungos sanguineus ibeae* Wroughton, *Ann. Mag. nat. Hist.* 20: 118, Aug. Fort Hall*, central Kenya Colony [0° 42' S., 37° 40' E., 4,000 feet].

Records.—Kibongoto, Kilimanjaro foothills; Olduwai; Ugogo; Itigi Thicket; Ormasse River; Shinyanga; Unyamwezi.

HERPESTES SANGUINEUS RUFESCENS LORENZ.

1898. *Herpestes ornatus rufescens* Lorenz, *Abh. senckenb. naturf. Ges.* 21: 462. Kokotoni, Zanzibar Island.

Record.—Zanzibar Island (endemic).

HERPESTES cf. H. MOSSAMBICUS (Matschie).

1914. *Calogale mossambica* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1914: 438, Dec. Cabaceira, north-east coastal Portuguese East Africa.

Records.—Widely distributed in the "miombo" country of Kilwa, Liwale (Murembwi River), Lindi, Masasi and Tunduru Districts.

Genus HELOGALE Gray. Dwarf Mongooses.

1862. *Helogale* Gray, *Proc. zool. Soc. Lond.* 1861: 308, text-f. (skull), April. Genotype, by monotypy (elimination), *Herpestes parvulus* Sundevall.

HELOGALE IVORI THOMAS. Montague's Dwarf Mongooses.

1919 *Helogale ivori* Thomas, *Ann. Mag. nat. Hist.* 4: 31, July. Lumbo, mainland opposite Mozambique Island, Portuguese East Africa [15° 1' S., 40° 40' E., sea-level].

Records.—Liwale; Siginda; Mwanza.

HELOGALE UNDULATA UNDULATA (Peters). Mozambique Dwarf Mongooses.

1852. *Herpestes undulatus* Peters, *Abh. preuss. Akad. Wiss., Berl.* 1852: 81, Feb.; *Reise Mossamb., Säugeth.*, p. 114, pl. 25. Mossimboa, north-east coast of Portuguese East Africa [11° 20' S., 40° 22' E., sea-level].

Records.—Uzigua; Morogoro; Kipera, Mkata River, Usagara; Mpanira; Dodoma; Misinko, Msogaa, Puma, Singida; Iringa; Bumpeke, Nasa, Usamiriro; Bukoba; Samuye; Usongo; Mwala River, Nyahua River.

HELOGALE UNDULATA RUFULA THOMAS. Kikuyu Dwarf Mongooses.

1910. *Helogale undulata rufula*, Thomas, *Ann. Mag. nat. Hist.* 5: 194, Feb; Mile 346 on the Kenya-Uganda Railway (i.e. 4 miles east of Kikuyu, near Nairobi), Kenya Colony [1° 15' S., 36° 41' E.] [*cf.* Moreau, Hopkins and Hayman, 1946: 411].

Records.—Shores of Lake Jipe; Kahe; Arusha; common in Masailand south of Arusha.

HELOGALE VICTORINA VICTORINA THOMAS. Lake Victoria Dwarf Mongooses.

1902. *Helogale victorina* Thomas, *Proc. zool. Soc. Lond.* 1902 (1): 120, 1 June. Nasa, south of Speke Gulf, Lake Victoria, Tanganyika Territory.

Records.—Kikuyu; Misinko, Mkalama, Nshinshi, Ruruma, Usure; Serengeti Plains; Nasa, Usamiriro; Sanga, Shanwa, Zagayu; Shinyanga.

* Fort Hall is cited as the type-locality in the original, not Kikuyu as stated by G. M. Allen (1939: 224).

Genus *ATILAX* F. Cuvier. **Marsh Mongooses.**

1826. *Atilax* F. Cuvier, in Geoffroy and Cuvier, *Hist. nat. Mamm.* 3: livr. 54 and text on the "Vansire" (not of Buffon and Daubenton), June*. Type, by monotypy, the "Vansire" of F. Cuvier = *Herpestes paludinosus* G. Cuvier [fide J. A. Allen, 1924: 167].

ATILAX PALUDINOSUS MORDAX (Thomas). **Nyasa Marsh Mongoose.**

1912. *Mungos paludinosus mordax* Thomas, *Ann. Mag. nat. Hist.* 10: 588, Dec. Mbasi Creek, 1,600 feet, north-west corner of Lake Nyasa, south-western Tanganyika Territory.

Records.—Mbasi Creek, Mwaya; Ntumbi; Liwale, Matandu River, Mbemkuru River, Murembwi River, Rovuma River.

ATILAX PALUDINOSUS RUBESCENS (Hollister). **Kilimanjaro Marsh Mongoose.**

1912. *Mungos paludinosus rubescens* Hollister, *Proc. biol. Soc. Wash.* 25: 1, 23 Jan. Foothills of Kilimanjaro at 4,000 feet, northern Tanganyika Territory.

Records.—Amani; Uzaramo; Bagiro, Mhonda; Kilosa, Tendigo; Kibongoto, foothills of Kilimanjaro, Weruweru Bridge; southern Masailand; Mbulu; Pemba Island (*subsp. incert.*).

Genus *MUNGOS* E. Geoffroy and G. Cuvier. **Banded Mongooses.**

1795. *Mungos* E. Geoffroy and G. Cuvier, *Mag. encycl.* 1795 (2): 184, 187. Genotype, by tautonymy, *Viverra mungo* Gmelin.

MUNGOS MUNGO COLONUS (Heller). **East African Banded Mongoose.**

1911. *Crossarchus fasciatus colonus* Heller, *Smithson. misc. Coll.* 56 (17): 16, 28 Feb. Southern Uaso Nyiro, Masai District, Kenya Colony.

Records.—Tanga; Dar es Salaam; generally distributed throughout the "miombo" wooding of the Southern Province; Kilimanjaro foothills; Mang'ora; Mneya; Zoisa; Dodoma, Nzingi; Manyoni, Mikwesi, Saranda; Misinko, Mkalama, Nshinshi, Puma, Ruruma, Uliampiti, Ushora, Usure; Mizizikaunga, Ntumbi, Nyahonga River; Banagi, Serengeti Plains; Mwanza, Ukerewe Island; Shanwa, Zagayu; Shinyanga; Ukune; Ugala River.

Genus *ICHNEUMIA* I. Geoffroy. **White-tailed Mongooses†.**

1835. *Lasiopus* I. Geoffroy, in Gervais, *Résumé leçons Mammal.*, Paris, p. 37. Genotype, by monotypy, *Herpestes albicaudus* G. Cuvier. Not *Lasiopus* Schoenherr, 1823, in Coleoptera (Curculionidae).

1837. *Ichneumia* I. Geoffroy, *Ann. Sci. nat., Zool.*, 8: 251, Oct.; *C. R. Acad. Sci. Paris.* 1837 (5): 580, Oct. Genotype, by monotypy (elimination), *Herpestes albicaudus* G. Cuvier.

ICHNEUMIA ALBICAUDA IBEANA (Thomas). **East-African White-tailed Mongoose.**

1904. *H[erpestes] a[lbicaudus] ibeana* Thomas, *Ann. Mag. nat. Hist.* 13: 409, text and footnote, June. Stony Athi, Machakos District, Kenya Colony [1° 38' S., 37° 1' E., 5,300 feet].

Records.—Tanga; Uzigua; Liwale; Ilonga, Kilosa, Tendigo; Kilimanjaro foothills, Lyamungu, Moshi; Umbugwe; Irangi; Mpwapwa; Dodoma; Manyoni,

* This reference to the genus *Atilax* has been the subject of much discussion. Cuvier mentioned no technical trivial name, referring only to the "Vansire" and *Atilax* Cuvier would appear to be a *genus caelebs*. However, J. A. Allen (1924: 167-173) has examined the matter at some length and has come to the conclusion that Cuvier's use of the generic name *Atilax* is valid and should be used. We have followed Allen's recommendation.

† Sometimes incorrectly referred to locally as "Skunks."

Ndaburo; Unyang'anyi; Ntumbi; Serengeti Plains; Ukerewe Island*; Bukoba; Shinyanga; Tabora.

Genus BDEOGALE Peters. **Four-toed Mongooses.**

1852. *Bdeogale* Peters. *Mber. preuss. Akad. Wiss., Berl.* 1852: 81, Feb†; *Reise Mossamb., Säugeth.*, p. 119. Genotype, by subsequent designation (Thomas, 1882, *Proc. zool. Soc. Lond.* 1882: 81), *Bdeogale crassicauda* Peters.

BDEOGALE CRASSICAUDA PUISA Peters. **Mozambique Four-toed Mongooses.**

1852. *Bdeogale puisa* Peters, *Mber. preuss. Akad. Wiss., Berl.* 1852: 82, Feb.; *Reise Mossamb., Säugeth.*, p. 124, pl. 28. Mossimboa, north-east coast of Portuguese East Africa [11° 20' S., 40° 22' E., sea-level].

Record.—Bagamoyo; Murembwi River.

BDEOGALE CRASSICAUDA TENUIS Thomas and Wroughton. **Zanzibar Four-toed Mongooses.**

1908. *Bdeogale tenuis* Thomas and Wroughton, *Proc. zool. Soc. Lond.* 1908: 168, 17 September. Zanzibar Island

Distribution.—Zanzibar Island (endemic).

BDEOGALE CRASSICAUDA OMNIVORA Heller. **Mombasa Four-toed Mongooses.**

1913. *Bdeogale crassicauda omnivora* Heller, *Smithson. misc. Coll.* 61 (13): 12, 16 Sept. Mazeras, Kilifi District, Kenya Colony [3° 57' S., 39° 32' E., ca 600 feet].

Records.—Magroto; Magamba.

Genus RHYNCHOGALE Thomas.

1865. *Rhinogale* Gray, *Proc. zool. Soc. Lond.* 1864: 573, text-f. (cranium), May. Genotype, by original designation and monotypy, *Rhinogale melleri* Gray. Not *Rhinogale* Gloger, 1841, in *Mammalia* (Mustelidae).

1894. *Rhynchogale* Thomas, *Proc. zool. Soc. Lond.* 1894: 139, text and footnote, June. Genotype, by original designation, *Rhinogale melleri* Gray. New name for *Rhinogale* Gray, preoccupied.

RHYNCHOGALE CANICEPS Kershaw.

1924. *Rhynchogale caniceps* Kershaw, *Ann. Mag. nat. Hist.* 13: 79, Jan. Outskirts of Otto Estate, near Mbweni, Kilosa District, Tanganyika Territory.

Records.—Otto Estate; Mkalama.

Family HYAENIDAE Gray.

Subfamily PROTELINAE Mivart.

Genus PROTELES I. Geoffroy. **Aard-“wolf.”**

1824. *Proteles* I. Geoffroy, *Bull. Sci. Soc. philom. Paris* 1824: 139, Sept. Genotype, by original designation, *Proteles lalandii* I. Geoffroy=*Viverra cristata* Sparrman.

Kiswahili: *fisi ndogo, fisi ya mkole.*

PROTELES CRISTATUS TERMES Heller. **Masailand Aard-wolf.**

1913. *Proteles cristatus termes* Heller, *Smithson. misc. Coll.* 61 (13): 9, 16 Sept. Kebololet Hill, south-west of Loita Plains and east of Amala River, Masai District, Kenya Colony [1° 35' S., 35° 8' E., 1,682 metres].

Records.—Lolkisale, southern Masailand; Sambala; Matomondo, Mpwapwa; Itumba, Manyoni; Singida; Kiganga; Shinyanga; Tabora.

* Recorded by G. M. Allen and Loveridge (1933: 77) as *Ichneumia a. grandis* (Thomas, 1890, *Proc. zool. Soc. Lond.* 1889: 622, pl. 62 (skull and teeth), April, from South Africa, on account of the large size of five specimens examined by them.

† An earlier reference to *Bdeogale* Peters is in the *Mitth. Ges. naturf. Fr. Berl.*, published in the *Speyersche Zeitung* on June 25, 1850. However, as no trivial name was mentioned in connection with the generic name, this reference is invalid.

Subfamily HYAENINAE Mivart. **Hyaenas.**Kiswahili: *fisi*.Genus CROCUTA Kaup*. **Spotted Hyaenas.**

1828. *Crocota* Kaup, Oken's *Isis* 1828: 1145. Genotype, by monotypy and tautonomy, *Canis crocota* Erxleben. Not *Crocota* Meigen, 1800, in Diptera.

1829. *Crocotta* Kaup. *Skizz. Europ. Thierw.* 1: 78. Genotype *Canis crocota* Erxleben.

CROCUTA CROCUTA (Erxleben).

1777. *Canis crocota* Erxleben, *Syst. Regn. Anim.*, p. 578. Senegambia, West Africa [*fide* Cabrera, 1911, *Proc. zool. Soc. Lond.* 1911: 95].

1900. *Hyaena (Crocotta) germinans* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1900: 26. Lake Rukwa, south-west Tanganyika Territory.

Records.—Ubiquitous.

Genus HYAENA Brisson. **Striped Hyaenas.**

1762. *Hyaena* Brisson, *Regn. Anim.*, ed. 2, pp. 13, 168. Genotype, by tautonomy, monotypy, and subsequent designation (Merriam, 1895, *Science* 1: 376, 5 April), *Hyaena hyaena* Brisson=*Canis hyaena* Linnaeus.

1772. *Hyaena* Brünnich, *Zool. Fundam.*, pp. 34, 42, 43. No trivial names mentioned; reference made to "*Hyænen*"=*Canis hyaena* Linnaeus.

1773. *Hyaena* Skoeldebrand, *Nova Acta Soc. Sci. upsal.* 1: 77. A vernacular name and therefore not available.

1780. *Hyæna* Zimmermann, *Geogr. Gesch.* 2: 256, Sept. Genotype *Hyaena striata* Zimmermann=*Canis hyaena* Linnaeus.

HYAENA HYAENA DUBBAH F. A. A. MEYER.

1793. *Hyaena Dubbah* F. A. A. Meyer, *Syst. Summ. Zool. Entd. Neuholl. u. Afr.*, p. 94. Atbara, Anglo-Egyptian Sudan.

Records.—Malolo; Engare Nanyuki; Lolkisale, Longido, Lake Natron area, Ol Balbal; Kwakuchinja, Mang'ati, Mangora, Mbulu; Sambala; Gulwe; Mkalama, Nshinshi; Serengeti Plains, Seronera River; Shinyanga; Kasulu.

Family FELIDAE Gray. **Cats.**

Subfamily FELINAE Trouessart.

Genus FELIS Linnaeus.

1758. *Felis* Linnaeus, *Syst. Nat.*, ed. 10, 1: 41. Genotype, by tautonomy, *Felis catus* Linnaeus.

Domesticated and Old-World Wild Cats.

Kiswahili: Domesticated Cats, *paka*; Wild Cats, *paka pori*, *kimburu*.

(FELIS CATUS Linnaeus. **Domesticated Cat.**

1758. *Felis Catus* Linnaeus, *Syst. Nat.*, ed. 10, 1: 42. Upsala, Sweden [*fide* Thomas, 1911, *Proc. zool. Soc. Lond.* 1911: 136].

Status.—Introduced under domestication and now widespread in suitable localities; feral in parts and occasionally crossing with *Felis lybica* Forster.)

* Opinion No. 152 of the International Commission on Zoological Nomenclature rules that generic names introduced by Meigen, 1800, in his *Nouvelle Classification des Mouches à deux ailes* are available. However, *Crocota*—which appears on page 39—is not generally recognised by entomologists. On the other hand, dating from Kaup, 1828, it is the generic name commonly used for the Spotted Hyaenas and it is suggested that, by suspension of the Rules, it should be retained as a *nomen conservandum* for this group.

FELIS LYBICA UGANDAE Schwann. **Ankole Wild Cat.**

1904. *Felis ocreata ugandae* Schwann, *Ann. Mag. nat. Hist.* 13: 424, June. Mulema, 5,000 feet, 2 miles north of the Tanganyika-Uganda boundary at Chitanda Hill, Ankole District, Uganda Protectorate [0° 58' S., 30° 58' E.].

Records.—Ilunga, Kilosa, Otto Estate, Tendigo; Umbugwe; Kondoa, Sandawe, Irangi; Mpwapwa; Dodoma; Manyoni, Saranda; Misinko, Nshinshi; Olduwai; Banagi, Serengeti Plains; Bukoba; Shinyanga; Igonda, Tabora; Chunya, Lupa Bridge, Mizizikaunga, Ntumbi; Momba River.

FELIS LYBICA TAITAE Heller. **Taita Wild Cat.**

1913. *Felis ocreata taitae* Heller, *Smithson. misc. Coll.* 61 (13): 14, 16 Sept. Voi, Taita District, Kenya Colony [3° 24' S., 38° 33' E., 1,280 feet].

Records.—Lyamungu, Old Moshi.

Genus CARACAL Gray. **Caracals.**

1843. *Caracal* Gray, *List Spec. Mamm. Coll. Brit. Mus.*, pp. xx (here spelt *Caracala*, *nomen nudum*), 46, 13 May; 1867, *Proc. zool. Soc. Lond.* 1867: 277, Oct. Genotype, by monotypy and original designation, *Caracal melanotis* Gray=*Felis caracal* Schreber.

Kiswahili: *simbamangu*.

CARACAL CARACAL NUBICUS (J. B. Fischer).

1829. *F[elis] caracal* γ *nubicus* J. B. Fischer, *Synop. Mamm.*, p. 210. Meroe, Nubia.

Records.—Kisiwani, Same; Kilosa, Otto Estate; Kilimanjaro foothills, Useri; southern Masailand, Naberera; Kondoa; Itumba, Manyoni; Mwanza; Shanwa; Kizumbi; Ukune.

Genus LEPTAILURUS Severtzow. **Serval Cats.**

1858. *Leptailurus* Severtzow, *Rev. Mag. Zool.* 10: 389, Sept. As a subgenus of *Felis* Linnaeus; type, by monotypy, *Felis serval* Schreber.

Kiswahili: *mondo*.

LEPTAILURUS SERVAL HINDEI (Wroughton). **Ukamba Serval.**

1910. *Felis capensis hindei* Wroughton, *Ann. Mag. nat. Hist.* 5: 205, Feb. Machakos, 33 miles south-east of Nairobi, Kenya Colony [1° 32' S., 37° 16' E., ca 5,400 feet].

Records.—Mombo; Uzaramo; Morogoro; Kilosa, Tendigo; widespread but rarely seen in Kilwa, Liwale, Lindi, Mikindani, Masasi and Tunduru Districts; near Lake Jipe; Engare Nairobi, Kilimanjaro up to 15,000 feet, Shira Plateau; Arusha; Naberera; Mt. Hanang; Kondoa; Dodoma; Saranda; Mkalama; Dabaga; Lupembe, Madehani; Ilolo; Mbeya; between the Lupa and Chipoka Rivers, Ntumbi; Serengeti Plains; Zagayu; Kizumbi; Kakoma; Chapota.

Subfamily PANTHERINAE Pocock.

Genus PANTHERA Oken.

1816. *Panthera* Oken, *Lehrb. Naturgesch.* 3 (2): 1052, 1058. Genotype, by tautonymy, *Panthera vulgaris* Oken=*Felis panthera* Schreber (plate name)=*Felis pardus* Linnaeus.

Subgenus PANTHERA Oken. **Leopards.**Kiswahili: *chui*.PANTHERA PARDUS FUSCA F. A. A. MEYER.* **Bengal Leopard.**1794. *Felis fusca* F. A. A. Meyer, *Zool. Ann.* 1: 394. Bengal.1900. *Felis leopardus suahelicus* Neumann, *Zool. Jb., Syst.* 13: 551, 10 Oct. Lake Manyara area, northern Tanganyika Territory.*Distribution.*—Ubiquitous in suitable localities.PANTHERA PARDUS ADERSI Pocock. **Zanzibar Leopard.**1932. *Panthera pardus adersi* Pocock, *Abstr. Proc. zool. Soc. Lond.*, no. 347, p. 33, 26 April; *Proc. zool. Soc. Lond.* 1932: 563, pl. 2, 8 July. Near Chwaka, Zanzibar Island.*Record.*—Zanzibar Island (endemic).Subgenus LEO Oken. **Lions.**1816. *Leo* Oken, *Lehrb. Naturgesch.* 3 (2): 1070. Genotype, by tautonomy, *Felis leo* Linnaeus.1829. *Leo* Brehm, Oken's *Isis* 1829: 637. No genotype specified, but the first species mentioned, *Leo asiaticus* Brehm, may be designated genotype.Kiswahili: *simba*.PANTHERA LEO MASSAICA (Neumann). **Masai Lion.**1900. *Felis leo massaica* Neumann, *Zool. Jb., Syst.* 13: 550, 10 Oct. Kibaya, southern Masailand, Tanganyika Territory [*vide* Moreau, Hopkins and Hayman, 1946: 412].*Distribution.*—Ubiquitous in suitable localities.

Subfamily ACINONYCHINAE Pocock.

Genus ACINONYX Brookes. **Cheetahs.**1828. *Acinonyx* Brookes, *Cat. Anat. Zool. Mus. Joshua Brookes*, pp. 16, 33. Genotype, by monotypy, *Acinonyx venator* Brookes=*Felis venatica* H. Smith.Kiswahili: *duma*.

ACINONYX JUBATUS (Schreber)†.

1775. *Felis jubata* Schreber, *Säugeth.* 2: pl. 105; 1777, *op. cit.* 3: 392. Cape of Good Hope, Cape Province, South Africa.

* We have followed Pocock (1932: 543) in using the name *P.p. fusca* (F. A. A. Meyer) for the Tanganyika leopards. Allen (1939: 244) must have misread Pocock when he states that "the implication is that the Indian and East African leopards in turn are not different from typical *pardus*." Pocock (*op. cit.*, p. 590), under his "Summary of the Races admitted in this paper," lists *fuscus* (No. 7) and *pardus* (No. 9) as separate subspecies of *Panthera pardus* (Linnaeus).

† Three very doubtfully distinct races of *Acinonyx jubatus*, viz. *A.j. ngorongorensis* Hilzheimer, *A.j. velox* and *A.j. raineyi* Heller, have been described from East Africa. We do not think that the East African cheetah deserves subspecific differentiation from the typical form of South Africa any more than that there are three distinct races of cheetahs in East Africa, but, should a separate name be required, one of the above is available. All three names were published in 1913; *velox* and *raineyi*—of which the former has page priority—were described in the same paper, published 8 November, but whether this paper appeared before that containing Hilzheimer's description of *ngorongorensis* is questionable. It probably did not. The original description of *ngorongorensis* appeared in a part of the *Sitzungsberichte Gesellschaft naturforschende Freunde*, Berlin, dealing with the May and June meetings of that Society, but there is nothing to indicate the actual date of publication. Unfortunately, the General Library of the British Museum (Natural History) can throw no further light on this. It is known, however, that Parts 5-6 (May-June)—containing Hilzheimer's paper—and 7-8 (July-October) all reached London on 20 December, 1913. It is suggested that the Berlin people kept back the earlier parts to send all together, and it seems reasonable to assume that the May-June parts came out well in advance of 8 November; in other words, that *ngorongorensis* was published before *velox* and *raineyi*. Hollister (1918: 151) confirms this conclusion when he says that *ngorongorensis* "has priority over *raineyi*."

1913. *Acinonyx guttatus ngorongorensis* Hilzheimer, S. B. Ges. naturf. Fr. Berl. 1913: 290, text-f. 3. Ngorongoro, northern Tanganyika Territory.

1913. *Acinonyx jubatus velox* Heller, *Smithson. misc. Coll.* 61 (19): 7, 8 Nov. Aggett's Store, near Narok, Kenya Colony [ca 1° 10' S., 36° E., 5,300 feet].

1913. *Acinonyx jubatus raineyi* Heller, *Smithson. misc. Coll.* 61 (19): 9, 8 Nov. Ulu Station, Kapiti Plains, Kenya Colony [1° 49' S., 37° 8' E., 5,250 feet].

Records.—North Pare Mts. (melanic specimen); Kidete; Mahindi (spoor of almost certainly this species); Jumbe Salim's, Songea (skin brought in to the boma from the neighbouring area in 1936); Kahe, Kingori Juu; southern Masailand, Ngorongoro, Olduwai; Iringa; Mrijo, Sambala, Sandawe; Manyoni, Muhalala; Ipemi; Kanamwene, Mbeya (a young one brought in to the boma from the neighbouring area in 1945); Nachisenga Mbuga; Lupa Bridge; Serengeti Plains; Meatu; Shinyanga; Chapota, Zimba.

Order TUBULIDENTATA Huxley.

Family ORYCTEROPODIDAE Bonaparte.

Genus ORYCTEROPUS G. Cuvier.* Aard-varks, Ant-bears.

1798. *Orycteropus* G. Cuvier, *Tabl. élém. Hist. nat. Anim.*, p. 144. Genotype, by monotypy, *Myrmecophaga capensis* Gmelin=*Myrmecophaga afra* Pallas.

1799. *Orycteropus* Lacepède, *Tabl. Mammif.*, p. 11. Genotype, by monotypy, *Orycteropus capensis* (Gmelin)=*Myrmecophaga afra* Pallas.

1803. *Orycteropus* E. Geoffroy, *Bull. Soc. philom., Paris* 1: 102, April-June, 1796†. Genotype, by monotypy, *Myrmecophaga capensis* Gmelin=*Myrmecophaga afra* Pallas.

Kiswahili: *muhanga*.

ORYCTEROPUS AFER (Pallas).

1766. *Myrmecophaga afra* Pallas, *Misc. Zool.*, p. 64. Cape of Good Hope, Cape Province, South Africa.

1898. *Orycteropus wertheri* Matschie, in Werther's *Mitl. Hochl. nordl. Disch-Ost-Afr.*, p. 266. Inland from Bagamoyo, eastern Tanganyika Territory.

1921. *Orycteropus afer matschiei* Grote, *Arch. Naturgesch.* 87 A (7): 122, f. 1, June. Mikindani, coastal south-eastern Tanganyika Territory.

1921. *Orycteropus afer observandus* Grote, *Arch. Naturgesch.* 87 A (7): 123, f. 1, June. Usangire North, northern Songea District, southern Tanganyika Territory.

1921. *Orycteropus afer lademanni* Grote, *Arch. Naturgesch.* 87 A (7): 123, June. Wasi, northern Kondoa District, central Tanganyika Territory.

1921. *Orycteropus afer ruwanensis* Grote, *Arch. Naturgesch.* 87 A (7): 123, f. 1, June. Ruwana Plains, Musoma District, northern Tanganyika Territory.

With the small amount of material available for comparison it is impossible to say how many, if any, of the above forms are valid, or whether the Tanganyika Aard-vark is distinct from the typical South African race.

Distribution.—Widespread in suitable localities. Being strictly nocturnal, aard-varks are rarely seen.

* Agassiz (1842, *Nomenclator Zool.*, *Mamm.*, p. 23) gave as the first reference to *Orycteropus* "E. Geoffroy, 1795, *Décade philosophique*," and G. M. Allen (1939: 270) and most other authors quote this as the earliest reference to the genus. However, Sherborn (1902: 701) said against this: "I cannot find this entry," and ascribed the genus to Lacepède, 1799; later (1922-32: 4635), he ascribed it to G. Cuvier, 1798. We have examined "*La Décade philosophique, littéraire et politique*" in the British Museum and can find no reference to "*Orycteropus* E. Geoffroy." This reference should henceforth be dropped and the genus ascribed to G. Cuvier, 1798.

† Though dated 1796, this work does not appear to have been published until 1803.

Order **PROBOSCIDEA** Illiger.Family **ELEPHANTIDAE** Gray.Genus **LOXODONTA** F. Cuvier. **African Elephants.**

1827. *Loxodonta* F. Cuvier, *Zool. f.* 3: 140, Jan. Based on F. Cuvier's "Loxodonte" (in E. Geoffroy and F. Cuvier, 1825, *Hist. nat. Mammif.* 3: livr. 51, 52, Nov.).
Genotype *Elephas capensis* F. Cuvier = *E. africanus* Blumenbach.

Kiswahili: *tembo, ndovu.*

LOXODONTA AFRICANA KNOCHENHAUERI (Matschie)*. **East African Elephant.**

1900. *Elephas africanus knochenhaueri* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1900: 197. Barikiwa, Liwale District, southern Tanganyika Territory.

Distribution.—Ubiquitous in suitable localities, from sea-level to approximately 16,000 feet on Kilimanjaro; absent from Mafia, Pemba and Zanzibar Islands.

Order **HYRACOIDEA** Huxley.Family **PROCAVIIDAE** Thomas.Genus **DENDROHYRAX** Gray. **Tree Hyraxes.**

1868. *Dendrohyrax* Gray, *Ann. Mag. nat. Hist.* 1: 48, Jan. Genotype, by subsequent designation (W. L. Sclater, 1900, *Fauna S. Afr., Mamm.* 1: 310), *Procavia arborea* (A. Smith).

Kiswahili: *perere.*

DENDROHYRAX ARBOREUS STUHLMANNI (Matschie).

1892. *Procavia stuhlmanni* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1892: 110. Bukoba, west shore of Lake Victoria, Tanganyika Territory.

Records.—Ukutu; Matengo Hills; Matonya, Irangi; Uhehe; Makoko; Bukoba; Shinyanga.

DENDROHYRAX VALIDUS VALIDUS True.

1890. *Dendrohyrax validus* True, *Proc. U. S. nat. Mus.* 13: 228, 16 Sept. Kilimanjaro, 6,000 feet, northern Tanganyika Territory.

Records.—Confined to the evergreen forests on Kilimanjaro and Mt. Meru.

DENDROHYRAX VALIDUS TERRICOLA Mollison.

1905. *Dendrohyrax terricola* Mollison, *Zool. Anz.* 29: 423, 26 Sept. Near Monga, Usambara Mts., Tanga District, north-eastern Tanganyika Territory.

1917. *Dendrohyrax terricola vosseleri* Brauer, *S. B. Ges. naturf. Fr. Berl.* 1917: 296, 10 Sept. Sigi, near Amani, Usambara Mts., north-eastern Tanganyika Territory.

Records.—Amani, Monga; Lushoto, Magamba; Pare Mts. (allied to but perhaps racially distinct from *D. v. terricola*).

DENDROHYRAX VALIDUS NEUMANNI (Matschie).

1893. *Procavia neumanni* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1893: 112. Pangani Forest, near Jembiani, Zanzibar Island [*vide* Moreau, Hopkins and Hayman, 1946: 431].

Records.—Pemba, Tumbatu and Zanzibar Islands.

DENDROHYRAX VALIDUS SCHUSTERI Brauer.

1917. *Dendrohyrax terricola schusteri* Brauer, *S. B. Ges. naturf. Fr. Berl.* 1917: 296, 10 Sept. Uluguru Mts., Morogoro District, Tanganyika Territory.

Records.—Uluguru Mts. at Bagiro, Mikarazi, Nyange, Nyingwa, Vituri.

* Doubtfully distinct from *L. a. africana* (Blumenbach, 1797, *Handb. Naturgesch.*, ed. 5, p. 125, Atlas, pl. 19, f. C) from the Orange River, South Africa.

Genus *Heterohyrax* Gray. **Rock—"rabbits."**

1868. *Heterohyrax* Gray, *Ann. Mag. nat. Hist.* 1: 50, Jan. As a subgenus of *Dendrohyrax* Gray; genotype *Dendrohyrax blainvillii* Gray = *Hyrax syriacus* Schreber.

Kiswahili: *pimbi*.

Heterohyrax syriacus dieseneri Brauer. **Lake Victoria Rock-rabbit.**

1917. *Heterohyrax brucei dieseneri* Brauer, *S. B. Ges. naturf. Fr. Berl.* 1917: 298, 10 Sept. Guta, north shore of Speke Gulf, Lake Victoria, Tanganyika Territory [*fide* Moreau, Hopkins and Hayman, 1946: 432].

1917. *Heterohyrax brucei victoria-njansae* Brauer, *S. B. Ges. naturf. Fr. Berl.* 1917: 299, 10 Sept. Mwanza, south shore of Lake Victoria, Tanganyika Territory [*fide* Allen, 1939: 448].

Records.—Geri, Guta, Ikoma, Serengeti Plains; Mwanza, Nyegezi, Ukerewe Island; Mondo; Shanwa, Zagayu; Tinde; Igonda, Mtambo River, Tabora.

Heterohyrax syriacus prittwitzi Brauer. **Ugogo Rock-rabbit.**

1917. *Heterohyrax brucei prittwitzi* Brauer, *S. B. Ges. naturf. Fr. Berl.* 1917: 299, 10 Sept. Kilimatinde, Manyoni District, central Tanganyika Territory.

Records.—Kibaya, Lolikisale; foot of Mt. Hanang, Mbulu; Kondoia; Kiboriani Hills, Mpwapwa; Dodoma, Itiso, Nayu; Bahi, Kilimatinde, Mahaka; Ikungi, Misinko, Msogaa, Puma, Unyang'anyi, Wembere Plains; Iringa, Uhehe.

Heterohyrax syriacus frommi (Brauer). **Upogoro Rock-rabbit.**

1913. *Procavia (Heterohyrax) frommi* Brauer, *S. B. Ges. naturf. Fr. Berl.* 1913: 136, Feb. Mahenge area, Ulanga District, Tanganyika Territory.

Record.—Mahenge area.

Heterohyrax syriacus ssongae Brauer. **Angoni Rock-rabbit.**

1917. *Heterohyrax brucei ssongae* Brauer, *S. B. Ges. naturf. Fr. Berl.* 1917: 300, 10 Sept. Songea, southern Tanganyika Territory.

Records.—Mkokono, Nandanga Hill; stony hills around Kilimarondo, Lihage, Matekwe, Nalungu; Kimbande, Matengo Hills, Ruira, Songea, Usangire.

Heterohyrax syriacus lademanni Brauer. **Ukinga Rock-rabbit.**

1917. *Heterohyrax lademanni* Brauer, *S. B. Ges. naturf. Fr. Berl.* 1917: 298, 10 Sept. Mwakete, 2,040 metres, Njombe District, Tanganyika Territory.

Records.—Milo, Mlando, Msangwa, Mwakete; Rungwe Mt.

Heterohyrax syriacus munzneri (Brauer). **Urungu Rock-rabbit.**

1913. *Procavia (Heterohyrax) munzneri* Brauer, *S. B. Ges. naturf. Fr. Berl.* 1913: 137, Feb. Kasanga, south-east corner of Lake Tanganyika, Ufipa District, Tanganyika Territory.

Records.—Luiche Scarp, Uvinza; Lupa Plateau, scarp along east and west sides of Lake Rukwa; Kasanga.

Genus *Procavia* Storr. **Hyraxes, "Coneys," Dassies.**

1780. *Procavia* Storr, *Prod. Meth. Mamm.*, pp. 39, 40 (footnote k), tab. B, July. Genotype, by original designation, *Cavia capensis* Pallas.

Kiswahili: *pimbi*.

Procavia johnstoni matschiei Neumann.

1900. *Procavia matschiei* Neumann, *Zool. Jb., Syst.* 13: 555, 10 Oct. Mwanza, south shore of Lake Victoria, northern Tanganyika Territory.

Records.—Plains west of Kilimanjaro; Olduwai; Mwanza, Nyegezi; Shanwa, Zagayu.

Order **PERISSODACTYLA** Owen.Suborder **HIPPOMORPHA** Wood.Family **EQUIDAE** Gray.Genus **EQUUS** Linnaeus.

1758. *Equus* Linnaeus, *Syst. Nat.*, ed. 10, 1: 73. Genotype, by tautonymy, *Equus caballus* Linnaeus.

Subgenus **EQUUS** Linnaeus. **Horses.**

Kiswahili: *farasi*.

(**EQUUS CABALLUS** Linnaeus. **Domesticated Horse.**

1758. *Equus Caballus* Linnaeus, *Syst. Nat.*, ed. 10, 1: 73. Europe and Asia.
Status.—Introduced under domestication.)

Subgenus **ASINUS** Gray. **Asses.**

1824. *Asinus* Gray, *Zool. J.* 1: 244, June. Genotype, by tautonymy, *Equus asinus* Linnaeus.

Kiswahili: *punda*.

(**EQUUS ASINUS** Linnaeus. **Domesticated Ass.**

1758. *Equus Asinus* Linnaeus, *Syst. Nat.*, ed. 10, 1: 73. Asia.
Status.—Introduced under domestication.)

Subgenus **HIPPOTIGRIS** H. Smith. **Zebras.**

1841. *Hippotigris* H. Smith, *Jardine's Naturalist's Libr.*, *Mamm.* 12: xv (*nomen nudum*), 321, pl. 21-25, June. Genotype, by subsequent designation (W. L. Sclater, 1900, *Fauna S. Afr.*, *Mamm.* 1: 282), *Equus zebra* Linnaeus.

Kiswahili: *punda milia*.

EQUUS BURCHELLII* BOHMI Matschie. **East African Burchell's Zebra.**

1892. *Equus bohmi* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1892: 131. Ruvo (or Pangani) River, north-eastern Tanganyika Territory.

Records.—Ubiquitous in suitable localities.

Suborder **CERATOMORPHA** Wood.Family **RHINOCEROTIDAE** Owen.Genus **DICEROS** Gray. **African Black Rhinoceroses.**

1821. *Diceros* Gray, *Lond. med. Repos.* 15: 306, 1 April. Genotype, by monotypy and original designation, *Rhinoceros bicornis* Linnaeus.

Kiswahili: *faru*.

DICEROS BICORNIS (Linnaeus). **Cape Black Rhino.**

1758. *Rhinoceros bicornis* Linnaeus, *Syst. Nat.*, ed. 10, 1: 56. Cape of Good Hope, Cape Province, South Africa [*vide* Thomas, 1911, *Proc. zool. Soc. Lond.* 1911: 144, 22 March].

Records.—Generally distributed in suitable localities in northern Tanga, Pare, Rufiji, Morogoro, Kilosa, Ulanga, Moshi (Kilimanjaro up to about 9,000 feet), Arusha, Masai, Mbulu, Kondoa, Mpwapwa, Dodoma, Manyoni, Singida, Iringa, north-eastern Mbeya, northern Chunya, Musoma, Maswa, Biharamulo, Bukoba, Shinyanga, Kahama, Tabora and Kigoma Districts. Umba Steppe; a few between the Matandu and Mbemkuru Rivers; Lihangwa River, between Nangu and Ngarambi; a few near Kandalu and Shimililo, quite a few along the Njenje River and the lower Mbarangandu, Luwegu and Kilombero Rivers; one shot at Ruu.

* *Equus burchellii* (Gray, 1824, *Zool. J.* 1: 247, pl. 9, f. 1, 2, June) and its subspecies are probably best regarded as subspecies of *Equus quagga* Boddaert (1785, *Elenchus Anim.*, p. 160).

Order ARTIODACTYLA Owen.

Suborder SUIFORMES Jaekel.

Family SUIDAE Gray.

Genus POTAMOCHOERUS Gray. **Bush-pigs.**

1843. *Choiropotamus* Gray, *List Spec. Mamm. Coll. Brit. Mus.*, pp. xxvii (spelt *Koiropotamus*, *nomen nudum*), 185, 13 May. Genotype, by original designation, *Choiropotamus africanus* Gray = *Sus koiropotamus* Desmoulins. Not *Chaeropotamus* Desmarest, 1822, in *Mammalia* (Suidæ).

1854. *Potamochoerus* Gray, *Proc. zool. Soc. Lond.* 1852: 129, 130, pl. 34, 27 June. Genotype *Choiropotamus pictus* Gray. New name for *Choiropotamus* Gray, preoccupied.

Kiswahili: *nguruwe*.

POTAMOCHOERUS PORCUS DAEMONIS Major. **Kilimanjaro White-faced Bush-pig.**

1897. *Potamochoerus choeropotamus daemonis* Major, *Proc. zool. Soc. Lond.* 1897: 367, pl. 25, f. 1; pl. 26, f. 3, 1 Aug. Kilimanjaro, northern Tanganyika Territory. *Records*.—Rain forest on Kilimanjaro and Mt. Meru.

POTAMOCHOERUS KOIROPOTAMUS cf P. K. JOHNSTONI Major. **North Nyasa Savannah Bush-pig.**

1897. *Potamochoerus johnstoni* Major, *Proc. zool. Soc. Lond.* 1897: 367, pl. 25, f. 3; pl. 26, f. 1, 1 Aug. Ngaramu Valley, in Nkana, North Nyasa District, northern Nyasaland.

Records.—Ubiquitous in suitable localities; present on Mafia and Zanzibar Islands, absent from Pemba Island.

Genus SUS Linnaeus. **Common Pigs, Wild Boars.**

1758. *Sus* Linnaeus, *Syst. Nat.*, ed. 10, 1: 49. Genotype *Sus scrofa* Linnaeus.

Kiswahili: *nguruwe*.

(SUS SCROFA Linnaeus. **Domesticated Pig.**

1758. *Sus Scrofa* Linnaeus, *Syst. Nat.*, ed. 10, 1: 49. Southern Europe.

Status.—Introduced under domestication to several parts of Tanganyika; present on Mafia and Pemba Islands.

Genus PHACOCHOERUS G. Cuvier. **Wart Hogs.**

1817. *Phacochoerus* G. Cuvier, *Règne Anim.*, ed. 1, 1: 236, footnote. Genotype, by monotypy, *Sus aethiopicus* Gmelin = *Aper aethiopicus* Pallas.

Kiswahili: *ngiri*.

PHACOCHOERUS AETHIOPICUS AELIANI (Cretzschmar). **Sudan Wart Hog.**

1828. *Phacochoeres Aeliani* Cretzschmar, in Rüppell's *Atlas Reise nördl. Afr., Säugeth.*, p. 61, pl. 25, 26. Kordofan, Anglo-Egyptian Sudan.

Distribution.—Ubiquitous in suitable localities.

Genus HYLOCHOERUS Thomas. **Giant Forest Hogs.**

1904. *Hylochoerus* Thomas, *Nature, Lond.* 70: 577, 13 Oct.; 1905, *Proc. zool. Soc. Lond.* 1904 (2): 193, 18 April. Genotype, by original designation, *Hylochoerus meinertzhageni* Thomas.

HYLOCHOERUS MEINERTZHAGENI SCHULZI Zukowsky*. **Oldeani Forest Hog.**

1921. *Hylochoerus schulzi* Zukowsky, *Arch. Naturgesch.* 87 A (1): 181 (text-f.), 189, Dec. Oldeani Mt.†, 2,000 metres, border of Mbulu and Masai Districts, northern Tanganyika Territory.

Records.—Mt. Meru (probable, but requires confirmation); Mutjek, Oldeani Mt.

Family HIPPOPOTAMIDAE Gray.

Genus HIPPOPOTAMUS Linnaeus. **Hippopotamuses.**

1758. *Hippopotamus* Linnaeus, *Syst. Nat.*, ed. 10, 1: 74. Genotype *Hippopotamus amphibius* Linnaeus.

Kiswahili: *kiboko*.

HIPPOPOTAMUS AMPHIBIUS AMPHIBIUS Linnaeus. **Northern Hippo.**

1758. *Hippopotamus amphibius* Linnaeus, *Syst. Nat.*, ed. 10, 1: 74. Nile River, Egypt.

Distribution.—Present in all suitable rivers and lakes from sea-level to about 6,000 feet. Present on Mafia Island, whither they swim from the Rufiji delta; absent from Pemba and Zanzibar Islands.

Suborder TYLOPODA Illiger.

Family CAMELIDAE Gray.

Genus CAMELUS Linnaeus. **Camels, Dromedaries.**

1758. *Camelus* Linnaeus, *Syst. Nat.*, ed. 10, 1: 65. Genotype *Camelus bactrianus* Linnaeus.

Kiswahili: *ngamia*.

(CAMELUS DROMEDARIUS Linnaeus. **One-humped (Arabian) Camel.**

1758. *Camelus dromedarius* Linnaeus, *Syst. Nat.*, ed. 10, 1: 65. Deserts of Libya and Arabia [*vide* Thomas, 1911, *Proc. zool. Soc. Lond.* 1911: 150, 22 March].

Status.—Formerly found under domestication along the east coast of Tanganyika from Dar es Salaam northwards; now rarely seen.)

Suborder RUMINANTIA Scopoli.

Family GIRAFFIDAE Gray.

Genus GIRAFFA Brisson. **Giraffes.**

1762. *Giraffa* Brisson, *Regn. Anim.*, ed. 2, pp. 12, 37. Genotype, by tautonomy and subsequent designation (Merriam, 1895, *Science* 1: 375, 5 Apr.), *Giraffa giraffa* Brisson ("Camelopardalis . . . La Giraffe" of Ethiopia) = *Cervus camelopardalis* Linnaeus.

1772. *Giraffa* Brünich, *Zool. Fundam.*, pp. 36, 46, 47. No trivial names mentioned; reference made to "Kameelparden," which, by tautonomy, is *Cervus camelopardalis* Linnaeus.

Kiswahili: *twiga*.

* Doubtfully distinct from the typical subspecies, *H.m. meinertzhageni* Thomas (1904, *Nature, Lond.* 70: 577, 13 Oct.; 1905, *Proc. zool. Soc. Lond.* 1904 (2): 193, pl. 14, 15, 18 April, Kakamega Forest, 7,000 feet, near Kaimosi, Kenya Colony).

† The type-locality given in the original was "Mutjekgebirge, 2,000 metres," which is shown on old maps as the high country west of the north end of Lake Manyara as far west as the Crater Highlands. The name "Mutjek," of Masai origin, has long since fallen into disuse. The reference to "Gebirge" in the original indicates that the type of *H. schulzi* was collected in the Crater Highlands and this is confirmed by the altitude "2,000 metres;" Forest Hogs are known to occur in the bamboo forests high up on Mt. Oldeani, the southernmost peak of the Crater Highlands, and this may be fixed as the type-locality of *H. schulzi* Zukowsky.

GIRAFFA CAMELOPARDALIS TIPPESKIRCHI Matschie. Tanganyika Giraffe.

1898. *Giraffa tippeskirchi* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1898: 78. South-east shore of Lake Eyasi within ten miles of 3° 40' S., 35° 15' E., Mbulu District, Tanganyika Territory.

Records.—Generally distributed in suitable localities in Lushoto, Pare, Handeni, Bagamoyo, Uzaramo, Morogoro, Kilosa, Moshi, Arusha, Masai, Mbulu, Kondoa, Mpwapwa, Dodoma, Manyoni, Singida, Iringa, Mbeya, Chunya, Musoma, Maswa, Biharamulo, Shinyanga, Nzega, Kahama, Buha, Tabora, Kigoma, Mpanda, and northern Ufipa Districts.

Family BOVIDAE Gray.**Subfamily BOVINAE Gill.****Tribe Strepsicerotini Simpson.****Genus STREPSICEROS H. Smith. Kudus.**

1827. *Strepsiceros* H. Smith, in Griffith's Cuvier, *Anim. Kingd.* 5: 365. As a subgenus of *Damalis* H. Smith; genotype, by tautonymy, *Antilope strepsiceros* Pallas.

Kiswahili: Greater Kudu, *tandala kubwa*; Lesser Kudu, *tandala ndogo*.

STREPSICEROS STREPSICEROS FROMMI Matschie. Tanganyika Greater Kudu.

1914. *Strepsiceros frommi* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1914: 391, Nov. Mpombolo River, 7° 23' S., 31° 10' E., Ufipa District, south-western Tanganyika Territory.

Records.—Twenty miles east of Geita; widely distributed in suitable localities in Pangani, Bagamoyo, Rufiji, Morogoro, Ulanga, Kilwa, Liwale, Mikindani, Newala, Masasi, Tunduru, Songea, Moshi, Arusha, Masai, Mbulu, Kondoa, Mpwapwa, Dodoma, Manyoni, Singida, Iringa, Mbeya, Chunya, Musoma, Maswa, Shinyanga, Nzega, Kahama, Buha, Tabora, Kigoma, Mpanda and Ufipa Districts.

STREPSICEROS IMBERBIS AUSTRALIS (Heller). Southern Lesser Kudu.

1913. *Ammelaphus imberbis australis* Heller, *Smithson. misc. Coll.* 61 (13): 2, 16 Sept. Lengaiya Water-hole, 22 miles south of Laisamis, Laikipia-Samburu District, Kenya Colony [1° 17' N., 37° 48' E., ca 2,200 feet].

Records.—Perani; Kamakota, Kivingo, Mkomazi Gap; Kitamuli Hill; Mswaki; near Pongwe; Engare Nairobi; Engare Nanyuki: generally distributed in Masailand east of the Rift Wall; Tarangire; east of Kikore, Sambala, Sandawe; Chipogolo, Kimugai Lake, Kisima, Zoisa; Kigwe, Makutapora; Mikwesii; east of Mungaa, Suna; Pawaga; Gugu River; Igundu, Kagongwa, Mwambasha, Mwantini Hills.

Genus TRAGELAPHUS Blainville. Bushbucks.

1816. *Tragelaphus* Blainville, *Bull. Sci. Soc. philom. Paris* 1816: 75, May. As a subgenus of *Cerophorus* Blainville; genotype, by subsequent designation (P. L. Sclater and Thomas, 1900, *Book of Antelopes* 4: 103, Jan.), *Antilope sylvatica* Sparrman.

Kiswahili: *mbawala*, *pongo*.

TRAGELAPHUS SCRIPTUS cf T. S. DAMA Neumann. Kavirondo Bushbuck.

1902. *Tragelaphus dama* Neumann, *S. B. Ges. naturf. Fr. Berl.* 1902: 97. Kavirondo, east of the north end of Lake Victoria, Kenya Colony.

Records.—Widely distributed in Musoma, Mwanza, Maswa and Bukoba Districts.

TRAGELAPHUS SCRIPTUS MASSAICUS Neumann. **Masai Bushbuck.**

1899. *Tragelaphus silvaticus*, var. *voualzyi* Noack, *Zool. Anz.* 22: 11, 16 Jan. Near the Mbemkuru River, south-eastern Tanganyika Territory. *Nomen nudum*. Misprint for *T. s. voualeyni* Thomas.

1902. *Tragelaphus massaicus* Neumann, *S. B. Ges. naturf. Fr. Berl.* 1902: 96. Upper Bubu River, north-west Irangi, Kondo District, Tanganyika Territory.

Records.—Widely distributed in suitable localities in the Eastern, Southern, Northern, Central and Western Provinces.

TRAGELAPHUS SCRIPTUS cf. *T. s. OLIVACEUS* Heller. **Kenya Coastal Bushbuck.**

1913. *Tragelaphus scriptus olivaceus* Heller, *Smithson. misc. Coll.* 61 (13): 1, 16 Sept. Maji ya Chumvi, Kwale District, Kenya Colony [3° 47' S., 39° 23' E., 540 feet].

1947. *Tragelaphus scriptus reidae* Babault, *Bull. Mus. Hist. nat. Paris* 19: 379. Amboni, near Tanga, north-eastern coastal Tanganyika Territory [*vide* Swynnerton, 1949: 156].

Records.—Widely distributed in suitable localities in the Tanga Province.

Genus LIMNOTRAGUS P. L. Sclater and Pocock. **Sitatungas.**

1872. *Hydrotragus* Gray, *Cat. rumin. Mamm. Brit. Mus.*, p. 49. As a subgenus of *Euryceros* Gray; genotype, by original designation, *Euryceros spekii* (P. L. Sclater). Not *Hydrotragus* Fitzinger, 1866 = *Adenota* Gray, 1847.

1900. *Limnotragus* P. L. Sclater and Pocock, in P. L. Sclater and Thomas, *Book of Antelopes* 4: 90, Jan.; 149, Aug. Genotype, by original designation, *Tragelaphus spekii* P. L. Sclater.

Kiswahili: *nzohe*.

LIMNOTRAGUS SPEKII SPEKII (P. L. Sclater). **Speke's Sitatunga.**

1863. *Tragelaphus Spekii* P. L. Sclater, in Speke, *J. Disc. Source Nile*, p. 223, footnote, fig.; 1864, *Proc. zool. Soc. Lond.* 1864: 103, pl. 12, text-f., July. Lake Lwelo ("Little Windermere"), southern Karagwe, Bukoba District, Tanganyika Territory [*vide* Swynnerton, 1945: 63].

1900. *Tragelaphus spekei* Neumann, *Zool. Jb., Syst.* 13: 562, 10 Oct. Lake Victoria. *Nomen nudum*. Misprint for *T. spekii* P. L. Sclater.

Records.—Swamps round Lake Victoria; swamps south of the Duma River; Lake Lwelo; Moyowosi Mbuga; Ugala River; Butanda, Malagarasi River, Sindi.

LIMNOTRAGUS SPEKII INORNATUS Cabrera. **Northern Rhodesia Sitatunga.**

1918. *Limnotragus spekei inornatus* Cabrera, *Bol. Soc. esp. Hist. nat.* 18: 276, May. Lake Young, 4,500 feet, 50 miles north of Mpika, Northern Rhodesia [11° 15' S., 31° 44' E.].

Records.—Kantesya River, upper Mlowa River, upper Songwe (Nyasa) River, Saisi River up to 5,300 feet; Lake Rukwa; Lake Chada; Ipeta Mbuga, Kalambo River, south of Malonje, south of Mpuu, Sumbawanga.

Genus TAUROT RAGUS Wagner. **Elands.**

1822. *Oreas* Desmarest, *Encycl. méth., Mamm.* 2: 471. As a subgenus of *Antilope* Pallas; genotype, by tautonymy, *Antilope oreas* Pallas = *Antilope oryx* Pallas. Not *Oreas* Hübner, 1806, in *Insecta*.

1855. *Taurotragus* Wagner, in Schreber, *Säugeth., Suppl.* 5: 438. As a subgenus of *Antilope* Pallas; genotype, by subsequent designation (P. L. Sclater and Thomas, 1900, *Book of Antelopes* 4: 200), *Antilope oreas* Pallas = *Antilope oryx* Pallas. New name for *Oreas* Desmarest, preoccupied.

Kiswahili: *pofu*, *mbunju*.

TAUROT RAGUS ORYX cf. *T. o. LIVINGSTONII* (P. L. Sclater). **Livingstone's Eland.**

1864. *Oreas livingstonii* P. L. Sclater, *Proc. zool. Soc. Lond.* 1864: 105, July. Near Sekhosi, Zambesi River upstream from Sesheke, about 115 miles north-west of Victoria Falls, Northern Rhodesia [*vide* Harper, 1940, *J. Mammal.* 21: 331, 14 Aug.].

Records.—Widely distributed in south-western Mbeya, Rungwe and southern Ufipa Districts.

TAUROTRAGUS ORYX BILLINGAE Kershaw*. **Iringa Eland.**

1923. *Taurotragus oryx billingae* Kershaw, *Ann. Mag. nat. Hist.* 11: 598, May. Ulete, Iringa District, Tanganyika Territory.

Record.—Ulete.

TAUROTRAGUS ORYX PATTERSONIANUS Lydekker. **East African Eland.**

1906. [*Taurotragus*] *oryx pattersonianus* Lydekker, *Field* 108: 579, 29 Sept. Laikipia Plateau, north of the Aberdare Range and east of the Rift Valley, Kenya Colony [*vide* Lydekker, 1907, *Novit. Zool.* 14: 324].

Distribution.—Widely distributed throughout Tanganyika other than in the areas occupied by the two preceding subspecies; on Kilimanjaro up to 16,000 feet.

Tribe *Bovini* Simpson.

Genus **BUBALUS** H. Smith. **Asiatic Buffaloes.**

1827. *Bubalus* H. Smith, in Griffith's Cuvier, *Anim. Kingd.* 5: 371. As a subgenus of *Bos* Linnaeus; genotype, by tautonymy *Bos bubalus* Gmelin=*Bos bubalis* Linnaeus [*vide* Hollister, 1911, *Proc. biol. Soc. Wash.* 24: 191, 23 June].

(**BUBALUS BUBALIS** (Linnaeus)).

1758. *Bos Bubalis* Linnaeus, *Syst. Nat.*, ed. 10, 1: 72. Asia.

Status.—Introduced under domestication to the Rufiji River some forty years ago; probably none now left.)

Genus **Bos** Linnaeus. **Cattle.**

1758. *Bos* Linnaeus, *Syst. Nat.*, ed. 10, 1: 71. Genotype, by tautonymy, *Bos taurus* Linnaeus.

Kiswahili: *ng'ombe*.

(**BOS TAURUS** Linnaeus. **Domesticated Cattle.**

1758. *Bos Taurus* Linnaeus, *Syst. Nat.*, ed. 10, 1: 71. Upsala, Sweden.

Status.—Introduced under domestication; widespread in suitable localities.)

Genus **SYNCERUS** Hodgson. **African Buffaloes.**

1847. *Syncerus* Hodgson, *J. Asiat. Soc. Beng.* 16: 709, Aug. Genotype, by subsequent designation (Hollister, 1911, *Proc. biol. Soc. Wash.* 24: 192, 23 June), *Bos brachyceros* Gray=*Bos nanus* Boddaert.

Kiswahili: *nyati, mbogo*.

SYNCERUS CAFFER CAFFER (Sparrman).† **Black, or Cape, Buffalo.**

1779. *Bos Caffer* Sparrman, *K. svenska VetenskAkad. Handl.* 40: 79. Little Sunday River, Algoa Bay, eastern Cape Province, South Africa.

1904. [*Bubalus*] *caffer radcliffei* Thomas, *Abstr. Proc. zool. Soc. Lond.*, no. 4, p. 13, 8 March; *Proc. zool. Soc. Lond.* 1904 (1): 464, text-f. 95, 2 Aug. Burumba, Ankole District, Uganda Protectorate.

Distribution.—Widely distributed in suitable localities from sea-level to approximately 14,000 feet on Kilimanjaro.

* Probably synonymous with *T.o. pattersonianus* Lydekker.

† Most recent workers follow Christy (1929: 459) in regarding all described forms of East and South African buffaloes as synonyms of *S.c. caffer* (Sparrman).

Subfamily CEPHALOPHINAE Brooke. **Duikers.**Genus CEPHALOPHUS H. Smith. **Red Forest Duikers.**

1827. *Cephalophus* H. Smith, in Griffith's Cuvier, *Anim. Kingd.* 5: 344. As a subgenus of *Antelope* Pallas; genotype, by subsequent designation (P. L. Sclater and Thomas, 1895, *Book of Antelopes* 1: 121, May), *Antelope silvicultrix* Afzelius.

Kiswahili: all species except Abbot's Duiker, *funo*; Abbott's Duiker, *minde*.

CEPHALOPHUS ADERSI Thomas. **Zanzibar Red Duiker.**

1918. *Cephalophus adersi* Thomas, *Ann. Mag. nat. Hist.* 2: 151, Aug. Zanzibar Island.

Distribution.—Confined to Zanzibar Island.

CEPHALOPHUS HARVEYI HARVEYI (Thomas). **Harvey's Red Duiker.**

1893. *Cephalolophus Harveyi* Thomas, *Ann. Mag. nat. Hist.* 11: 48, Jan. Kahe Forest, south-east of Kilimanjaro, northern Tanganyika Territory [*vide* Swynnerton, 1945: 58].

Records.—*Near Tanga, Amani; Usambara; Sadani; Dar es Salaam; Bagiro; Kahe Forest, Kilimanjaro up to 9,000 feet, Lumi River; Mt. Meru; Nou Forest; Irangi, Sandawe; Mpwapwa; Njombe.

CEPHALOPHUS NATALENSIS ROBERTSI W. Rothschild. **Natal Red Duiker.**

1906. *Cephalophus robertsi* W. Rothschild, *Proc. zool. Soc. Lond.* 1906: 691, 10 Oct. Portuguese East Africa.

Distribution.—Generally distributed in suitable localities throughout the Southern Province.

CEPHALOPHUS SPADIX True. **Abbot's Duiker.**

1890. *Cephalophus spadix* True, *Proc. U. S. nat. Mus.* 13: 227, 16 Sept. Kilimanjaro, northern Tanganyika Territory.

Records.—Magamba, Shume Forest, Usambara Mts; Uluguru Mts.; Kilimanjaro; forest on the Rift Wall between Babati and Mbulu; Mfrika Scarp at eastern edge of Uzungwa Mts.; Rungwe Mt.; probably Poroto Mts.

Genus GUEVEI Gray. **Blue Forest Duikers.**

1840. *Philantomba* Blyth, in Cuvier's *Anim. Kingd.*, p. 140. Possibly not used in a generic sense; no genotype specified. Dropped in favour of *Guevei* Gray, for which there is a definite genotype.

1852. *Guevei* Gray, *Cat. Spec. Mamm. Coll. Brit. Mus.* 3: 86. As a subgenus of *Cephalophus* H. Smith; genotype, by original designation, *Antelope maxwellii* H. Smith.

Kiswahili: *paa*.

GUEVEI CAERULUS HECKI (Matschie). **Mozambique Blue Duiker.**

1897. *Cephalolophus hecki* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1897: 158. Mozambique Coast, Portuguese East Africa.

Records.—Amboni; near Dar es Salaam; Mbarawala Forest; forest between Mtapaya and Matapwa, Kitumbini Forest; Mkwihhi Forest; coastal forests near Mikindani; Mafia Island.

GUEVEI CAERULUS LUGENS (Thomas). **Usangu Blue Duiker.**

1898. *Cephalophus lugens* Thomas, *Proc. zool. Soc. Lond.* 1898: 393, 1 Oct. Urowi, ca 3,000 feet, Mbeya District, Tanganyika Territory.

Records.—25 miles west of Tukuyu, Nkuka Forest; Urowi; Kalambo Falls, Mpui.

* A specimen collected by Kollman on the Ruwana Plains, near Lake Victoria, was referred to this species by Matschie (1898: 232), but this identification may be doubted since Harvey's Duiker is a forest dweller.

GUEVEI CAERULUS SCHUSTERI (Matschie). Uluguru Blue Duiker.

1914. *Cephalophus (Guevei) schusteri* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1914: 352, July. Uluguru Mts., 1,000 metres, eastern Tanganyika Territory.

Records.—Magamba, Usambara Mts.; Bagiro, Nyingwa, Uluguru Mts.

GUEVEI CAERULUS SUNDEVALLI (Fitzinger). Zanzibar Blue Duiker.

1869. *Cephalophus pygmaeus Sundevalli* Fitzinger, *S. B. Akad. Wiss. Wien* 59 (1): 166. [Probably Chapani] Islet beside Zanzibar Island. Based on "*Sylvicapra monticola*. *Var.*" Sundevall.

Distribution.—Zanzibar Island and two small neighbouring islets.

GUEVEI CAERULUS PEMBAE (Kershaw). Pemba Blue Duiker.

1924. *Cephalophus melanorheus pembae* Kershaw, *Ann. Mag. nat. Hist.* 13: 556, May. Vitongoji, east shore of Pemba Island.

Distribution.—Pemba Island (endemic).

GUEVEI CAERULUS AEQUATORIALIS (Matschie). Uganda Blue Duiker.

1892. *Cephalolophus aequatorialis* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1892: 112. Chagwe, between Kampala and the Victoria Nile River, Mengo District, Uganda Protectorate.

Records.—Banagi; near Shanwa; Karagwe, Minziro Forest.

Genus SYLVICAPRA Ogilby. Bush Duikers, Duikerboks.

1837. *Sylvicapra* Ogilby, *Proc. zool. Soc. Lond.* 1836: 138, 27 June. Genotype, by original designation, *Antilope mergens* Desmarest = *Capra grimmia* Linnaeus.

Kiswahili: *nsya*.

SYLVICAPRA GRIMMIA (Linnaeus).

1758. *Capra grimmia* Linnaeus, *Syst. Nat.*, ed. 10, 1: 70. Western Cape Province, South Africa.

1905. *Sylvicapra abyssinica nyansae* Neumann, *S. B. Ges. naturf. Fr. Berl.* 1905: 89. Sidho (Kitoto's), Nyando River valley near Chemilil, Central Kavirondo District, Kenya Colony [0° 7' S., 35° 7' E.].

1910. *Cephalophus abyssinicus hindei* Wroughton, *Ann. Mag. nat. Hist.* 5: 273, March. Fort Hall, central Kenya Colony [0° 42' S., 37° 40' E., 4,070 feet].

1910. *Cephalophus abyssinicus shirensis* Wroughton, *Ann. Mag. nat. Hist.* 5: 274, March. Zomba, southern Nyasaland [15° 34' S., 35° 17' E., ca 3,000 feet].

1913. *Sylvicapra grimmia deserti* Heller, *Smithson. misc. Coll.* 61 (17): 4, 21 Oct. Voi, Taita District, Kenya Colony [3° 24' S., 38° 33' E., 1,830 feet].

Distribution.—Bush Duikers, as represented by some or all of the above races, are common throughout Tanganyika except, apparently, the south-eastern coastal area.

Subfamily HIPPOTRAGINAE Brooke.**Tribe Reduncini Simpson.****Genus KOBUS A. Smith. Waterbucks.**

1840. *Kobus* A. Smith, *Ill. Zool. S. Afr., Mann.*, pt. 12, pl. 28 and text; pl. 29, Oct. Genotype, by original designation, *Kobus ellipsiprymnus* (Ogilby).

Kiswahili: *kuro*.

KOBUS ELLIPSIPRYMNUS KONDENSIS Matschie. Nyasa Common Waterbuck.

1911. *Kobus ellipsiprymnus kondensis* Matschie, *Mitt. zool. Mus. Berl.* 5: 556, Aug. Mwaye, north end of Lake Nyasa, south-western Tanganyika Territory.

Records.—Widespread in suitable localities in south-central and south-eastern Tanganyika in Rufiji, Morogoro, Kilosa, Ulanga, Kilwa, Liwale, Lindi, Mikiindani, Nwala, Masasi, Tunduru, Songea, Mpwapwa, Rungwe and Mbeya Districts. The dividing line between the ranges of this and the next race is not known and the distribution given here is arranged geographically rather than on any anatomical differences between the two races.

KOBUS ELLIPSIPRYMNUS KURU Heller*. Swahili Common Waterbuck.

1913. *Kobus ellipsiprymnus kuru* Heller, *Smithson. misc. Coll.* 61 (13): 6, 16 Sept. Taveta, south-east of Kilimanjaro, Taita District, Kenya Colony [3° 25' S., 37° 40' E., 2,490 feet].

Records.—Widespread in suitable localities in north-eastern Tanganyika in Tanga, Pangani, Lushoto, Pare, Handeni, Bagamoyo, Moshi and Arusha Districts.

KOBUS ELLIPSIPRYMNUS THIKAE Matschie. Highland Common Waterbuck.

1910. *Kobus ellipsiprymnus thikae* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1910: 411. Thika River north of Ol Donyo Sabuk, Kenya Colony.

Records.—Widespread in suitable localities in northern and central Tanganyika east of the Rift Wall in Masai, Mbulu, Kondoa and Singida Districts. An isolated herd of Common Waterbuck was reported in 1927 near Nyamirembe Bay, Biharamulo District, many miles to the west of the present limits of this species and well into "Defassa" country.

KOBUS DEFASSA UGANDAE Neumann. Uganda Defassa Waterbuck.

1905. *Kobus unctuosus ugandae* Neumann, *S. B. Ges. naturf. Fr. Berl.* 1905: 92. Mayanja River, border between Mubende and Mengo Districts, Uganda Protectorate.

Records.—Bukoba and Buha Districts.

KOBUS DEFASSA ADOLFI-FRIDERICI (Matschie). Serengeti Defassa Waterbuck.

1906. *Cobus adolfi-friderici* Matschie, *Weidwerk Wort Bild* 15: 234; 1910, *S. B. Ges. naturf. Fr. Berl.* 1910: 409. Orangi River south of Ikoma, Musoma District, Tanganyika Territory.

1913. *Kobus defassa raineyi* Heller, *Smithson. misc. Coll.* 61 (13): 5, 16 Sept. Amala River, west of Loita Plains, south-western Kenya Colony.

Records.—Widespread in suitable localities west of the Rift Wall in Masai, Musoma, Mwanza and Shinyanga Districts.

KOBUS DEFASSA CRAWSHAYI (P. L. Sclater). Northern Rhodesia Defassa Waterbuck.

1894. *Cobus crawshayi* P. L. Sclater, *Proc. zool. Soc. Lond.* 1893: 726, text-f., April. North shore of Lake Mweru, Northern Rhodesia [ca 8° 30' S., 29° E., 3,060 feet].

Records.—Widespread in suitable localities in Manyoni, Rungwe, western Mbeya, Chunya, Tabora, Kigoma, Mpanda and Ufipa Districts.

Genus ADENOTA Gray. Kobs, Pukus.

1847. *Adenota* Gray, *List osteol. Spec. Brit. Mus.* pp. xv, 146; 1851, *Proc. zool. Soc. Lond.* 1850: 129, 24 Feb. Genotype, by monotypy, *Antilope kob* (Erxleben).

ADENOTA KOB THOMASI (P. L. Sclater). Uganda Kob.

1864. *Kobus leucotis* P. L. Sclater, *Proc. zool. Soc. Lond.* 1864: 103, July. Buganda Province, Uganda Protectorate. Not *Antilope leucotis* Lichtenstein and Peters, 1854.

1896. *Cobus thomasi* P. L. Sclater (ex Neumann MS), *Proc. zool. Soc. Lond.* 1895: 869, 870, text-f., April. Berkeley Bay, north-east shore of Lake Victoria, boundary between Kenya Colony and Uganda Protectorate.

Records.—Recorded by Roosevelt and Heller (1915: 517) as occurring in Bukoba District and near the Simiyu River south-east of Mwanza. The latter record is

* Probably synonymous with *K.e. thikae* Matschie.

extremely doubtful, and this species has not been recorded from any part of Tanganyika in recent years.

ADENOTA VARDONII SENGANUS (P. L. Sclater). Northern Puku.

1897. *Cobus senganus* P. L. Sclater, in P. L. Sclater and Thomas, *Book of Antelopes* 2: 145, Jan. Asenga country, 2,500 feet, upper Luangwa River Valley, north-eastern Northern Rhodesia [*vide* Moreau, Hopkins and Hayman, 1946: 437].

Distribution.—In south-west Tanganyika around the north shore of Lake Nyasa; the south and west shores of Lake Rukwa between Ngomba and Ntakasangwa; the upper Ulanga Valley from the Ifakara ferry in the east to within fifteen miles of Utengule in the west, and from the base of the Uzungwa Mts. in the north to the Lupiro-Malinyi district motor road in the south.

Genus REDUNCA H. Smith. Reedbucks.

1816. *Cervicapra* Blainville, *Bull. Sci. Soc. philom. Paris* 1816: 75, May. Genotype, by subsequent designation (P. L. Sclater and Thomas, 1897, *Book of Antelopes* 2: 155, March; Palmer, 1904, *Index Gen. Mammal.*, p. 173), *Antilope redunca* Pallas. Not *Cervicapra* Sparrman, 1780.

1827. *Redunca* H. Smith, in Griffith's Cuvier, *Anim. Kingd.* 5: 337. As a subgenus of *Antilope* Pallas; genotype, by absolute tautonymy, *Antilope redunca* Pallas.

Kiswahili: *tohe*.

REDUNCA REDUNCA UGANDAE (Blaine)*. Ankole Bohor Reedbuck.

1913. *Cervicapra bohor ugandae* Blaine, *Ann. Mag. nat. Hist.* 11: 289, 291, March. Ankole, south-western Uganda Protectorate.

Records.—Karagwe, Kiziba.

REDUNCA REDUNCA WARDI (Thomas). Highland Bohor Reedbuck.

1900. *Cervicapra redunca Wardi* Thomas, *Ann. Mag. nat. Hist.* 6: 304, Sept. Mau Plateau, west of Nakuru, Kenya Colony.

Records.—Ngorongoro, Ol Biribiri; Yaida; Kikore, Manyata, Sambala, Serya; Bahi; Lake Chaya; Kidaru, Wembere; Rumuli; Buhoro Flats, Usangu; Lupa River, Makanganga, Ntumbi; south shore of Lake Rukwa; Ikoma, Mara River, Musoma, Seronera River; south of the Duma River, Kimali, Mahaha; Biharamulo, Nyamirembe; Huruhuru, Nindo, Shinyanga; Galagala River, Malagarasi River; Igombe River, Kwazi River, Nyahua, Ugala River; Butanda, Luiche; Lake Chada, Katavi Plain; Chapota, Kachungu, Mfi, Namanyere.

REDUNCA REDUNCA TOHI Heller*. Swahili Bohor Reedbuck.

1913. *Redunca redunca tohi* Heller, *Smithson. misc. Coll.* 61 (7): 10, 31 July. Mariakani, Kilifi District, Kenya Colony [3° 52' S., 39° 27' E., 670 feet].

Records.—Amboni; Chunge, Kivingo; Zombe; Kilosa; lower Kilombero valley, Luhombero River, Luwegu River, lower Ruaha River; between the Matandu and Rufiji Rivers; Ruhu River; Rovuma River; Lake Jipe, Ngulu; Arusha Chini, Kahe; Lake Momela; Meserani Dam; Tarangire; Lake Manyara.

REDUNCA ARUNDINUM OCCIDENTALIS (W. Rothschild). Southern Reedbuck.

1907. *Cervicapra arundinum occidentale* W. Rothschild, *Proc. zool. Soc. Lond.* 1907: 237, 1 Aug. Near Fort Jameson, Eastern Province, Northern Rhodesia [13° 37' S. 32° 41' E.].

* Probably synonymous with *R. r. wardi* (Thomas).

Records.—Widespread in Kilwa, Liwale, Lindi, Mikindani, Newala, Masasi, Tunduru and Songea Districts; Ipemi; Mwaya, Songwe (Nyasa) River; Msangalawe, between Tunduma and the Saisi River; Luika; lower Mara River (Neumann); west Mwanza District; Biharamulo-Bukoba border, south-west Biharamulo; Nindo; Burigi, Kahama, Ngaya; Kakoma; Kalambo Falls, Mfi.

REDUNCA FULVORUFULA CHANLERI (W. Rothschild). **Chanler's Mountain Reedbuck.**

1895. *Cervicapra chanleri* W. Rothschild, *Novit. zool.* 2: 53, 1 Feb. Slopes of the Jombeni Range, north-east of Mt. Kenya, Meru District, Kenya Colony.

Records.—Kilimanjaro up to 15,000 feet, Engare Nairobi; Mt. Gelai at 7,000 feet, Ngorongoro; Mt. Hanang; Bereku Ridge; Banagi Hill; Matwiga; Ol Biri-biri, Sadiman Hill.

Tribe *Hippotragini* Simpson.

Genus *HIPPOTRAGUS* Sundevall.

1845. *Hippotragus* Sundevall, *Ofvers. Vetenskakad. Förh., Stockh.* 2: 31. Genotype, by monotypy and original designation, *Antelope equina* Pallas. Under suspension of the Rules, *Hippotragus* Sundevall is adopted as the proper generic name instead of *Egocerus* Desmarest [*vide Opin. int. Comm. zool. Nom.*, no. 109, in *Smithson. misc. Coll.* 73 (6): 16, 8 June, 1929].

Kiswahili: Roan Antelope, *korongo*; Sable Antelope *palahala*, *mbarapi*.

HIPPOTRAGUS EQUINUS LANGHELLDI Matschie. **East African Roan Antelope.**

1898. *Hippotragus langheldi* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1898: 182. Tabora, western Tanganyika Territory.

Records.—Mkata, Mswaki; Mandera; Mang'ati; Kikore, upper Bubu River; Ruruma; between the Mara and Ruwana Rivers, west from Maji Moto and Nata to Lake Victoria, Banagi northwards to the Kenya boundary; Gugu River, Kimali, Machanta Hill, Nyaruboro Hill, Shonu, near the Simiyu River, Zagayu; Kiziba; west of Kitalala, Mwamalasa. Widespread in western Kondo, south-west Manyoni, south-west Mbeya, Chunya, western Mwanza, Biharamulo, Bukoba, Nzega, Kahama, Buha, Tabora, Kigoma, Mpanda and Ufipa Districts.

HIPPOTRAGUS NIGER ROOSEVELTI (Heller). **Northern Sable Antelope.**

1910. *Ozanna roosevelti* Heller, *Smithson. misc. Coll.* 54 (6): 1, 3 March. Shimba Hills, Kwale District, Kenya Colony.

Records.—Girihini, Makunde, Perani; Genda Genda; Lake Jipe, Kisiwani; Kang'ata, Mswaki; Kingoni, Kisaake, Sadani, Udoo; Kibiti, Mbuni, Mohoro, Mpanga, Ndundu, Selous Reserve, Ute, Zombe; Ukami, Ukutu; Kidete, Kilosa, Kipera, Mkata; Ifakara, lower Kilombero Valley, Luhombero River, Mahura, Malinyi; Ngayaki, Pagwi; Rungwa River, Ushilo; Barabara's, north of Ilunga Range, Lupa Plateau, Makanganga; Geita, west of Smith Sound; 20 miles north of Biharamulo, Busirayombo, Nyamirembe; Huruhuru; Burigi; Kilumbi, Nyahua, Ugunda; north and west of Katavi Plain; Ntumba. Widespread in Kilwa, Liwale, Lindi, Mikindani, Newala, Masasi, Tunduru and Songea Districts.

Genus *ORYX* Blainville. **Oryxes, Gemsboks.**

1816. *Oryx* Blainville, *Bull. Sci. Soc. philom. Paris* 1816: 75, May. Genotype, by tautonymy, *Antelope oryx* Pallas=*Capra gazella* Linnaeus.

Kiswahili: *choroa*.

ORYX BEISA CALLOTIS Thomas. **Kilimanjaro Fringe-eared Oryx.**

1892. *Oryx callotis* Thomas, *Nature, Lond.* 45: 526, 31 March; *Proc. zool. Soc. Lond.* 1892: 195, pl. 14, Aug. Neighbourhood of Kilimanjaro, Kenya Colony or Tanganyika Territory.

Records.—Perani; Chunge, Kamakota, Kivingo; Lake Jipe, Kifaru, Kiria, Kisiwani, Lulambu; Mswaki; Engare Nairobi, Useri; Engare Nanyuki; east of Kikore, Mkenya; Mlali Plains; widespread in Masailand east of the Rift Wall, only a few herds west of the Rift Wall on the Sanjan Plains.

Tribe *Alcelaphini* Simpson.

Genus *DAMALISCUS* P. L. Sclater and Thomas. *Topis*, *Sassabys*.

1846. *Damalis* Gray, *Ann. Mag. nat. Hist.* 18: 233, Oct. Genotype, by subsequent designation (P. L. Sclater and Thomas, 1894, *Book of Antelopes* 1: 51, Aug.), *Antilope lunata* Burchell. Not *Damalis* Fabricius, 1805, in Diptera.

1894. *Damaliscus* P. L. Sclater and Thomas, *Book of Antelopes* 1: 3, 51, Aug. Genotype *Antilope pygarga* Pallas. New name for *Damalis* Gray, preoccupied.

Kiswahili: *nyamera*.

DAMALISCUS KORRIGUM UGANDAE Blaine*. *Ankole Topi*.

1914. *Damaliscus korrigum ugandae* Blaine, *Ann. Mag. nat. Hist.* 13: 334, March. South-west Ankole, Uganda Protectorate.

Records.—Karagwe, Kiziba.

DAMALISCUS KORRIGUM JIMELA (Matschie). *Unyamwezi Topi*.

1892. *Damalis jimela* Matschie, S. B. Ges naturf. Fr. Berl. 1892: 135. Unyamwezi, Western Province, Tanganyika Territory.

Records.—Kilimanjaro area (Jackson; none now there); between the Duma River and Ikoma, Kitario, between the Mara and Ruwana Rivers, Serengeti Plains; Nasa, west of Smith Sound; south of the Duma River, Mahaha, Nunghu, Zagayu, Biharamulo; Huruhuru; Marang'ombe Mbuga; Mabama, Unyamwezi; Lake Chada, Katavi Plain; Mpimbwe, Rukwa Valley, Ukia, Usevia.

DAMALISCUS KORRIGUM EURUS Blaine*. *Usangu Topi*.

1914. *Damaliscus korrigum eurus* Blaine, *Ann. Mag. nat. Hist.* 13: 335, March. Buhero Flats, Upper Ruaha River, Southern Highlands Province, Tanganyika Territory.

Records.—Known only from the type-locality.

Genus *ALCELAPHUS* Blainville†. *Hartebeests*.

1816. *Alcelaphus* Blainville, *Bull. Sci. Soc. philom. Paris* 1816: 75, May. Genotype, by subsequent designation (P. L. Sclater and Thomas, 1894, *Book of Antelopes* 1: 5, 7, Aug.), *Antilope buselaphus* Pallas.

Kiswahili: *kongoni*.

ALCELAPHUS BUSELAPHUS JACKSONI (Thomas). *Jackson's Hartebeest*.

1892. *Bubalis Jacksoni* Thomas, *Ann. Mag. nat. Hist.* 9: 386, May. Country between Lakes Victoria and Naivasha, south-west Kenya Colony.

Records.—South-west of Lake Victoria; widespread in Bukoba District.

ALCELAPHUS BUSELAPHUS COKII Günther. *Coke's Hartebeest*.

1884. *Alcelaphus Cokii* Günther, *Ann. Mag. nat. Hist.* 14: 426, text-f. 1, Dec. Mlali Plains, Mpwapwa District, Tanganyika Territory.

Records.—Perani; Kamakota, Kivingo; Lake Jipe, Kambi ya Simba near Kisiwani, Ngulu Gap, Same; Engare Nairobi; Lake Momela, Engare Nanyuki; foot of Mt. Hanang, Uhome; Kikore, Ndadya, Sambala; north of Kiboriani and Mlali Mts.; Itiso; between Kapalata and Saranda, Mikwesi; Mkalama, Sibiti River,

* Probably synonymous with *D.h. jimela* (Matschie).

† *Bubalis* Lichtenstein, 1814, which antedates *Alcelaphus* Blainville, 1816, is not available [fide Lyon, 1914, *Proc. biol. Soc. Wash.* 27: 228, 29 Dec.; Hollister, 1921, *Proc. biol. Soc. Wash.* 34: 77, 31 March].

Wembere; generally distributed in Masai, Mbulu, Musoma, Maswa and Shinyanga Districts.

ALCELAPHUS LICHTENSTEINII (Peters). **Lichtenstein's Hartbeest.**

1849. *Antilope (Bubalis) Lichtensteinii* Peters, *Mith. Ges. naturf. Fr. Berl.* published in *Spencersche Zig* on 23 Dec.; 1852, *Reise Mossamb., Säugeth.*, p. 190, pl. 43, 44. Tete, south bank of the Zambesi River, Borema District, Portuguese East Africa [16° 9' S., 33° 36' E., 250 feet].

Records.—Genda Genda Hill; Kingoni River, near Pongwe, Wami River; Tununguo, Ukami; Chipogolo; ten miles south-west and 25 miles north of Biharamulo, Nyamirembe; generally distributed in Uzaramo, Rufiji, Kilosa, Ulanga, Kilwa, Liwale, Lindi, Newala, Masasi, Tunduru, Songea, Dodoma and Manyoni south of the Centr 1 Railway, Iringa, Mbeya, Chunya, western Mwanza, western Nzeza, western Kahama, southern Buha, Tabora, Kigoma, Mpanda and Ufipa Districts.

Genus GORGON Gray. Brindled Gaus, Blue Wildebeests.

1850. *Gorgon* Gray, *Glean. Menag. Av. Knowsley* 2: 20, pl. 19, f. 2; 1851, *Proc. zool. Soc. Lond.* 1850: 139, 24 Feb. As a subgenus of *Catoblepas* Gray; genotype, by tautonymy, *Antilope gorgon* H. Smith=*Antilope taurina* Burchell.

Kiswahili: *nyumbu*.

GORGON TAURINUS JOHNSTONI (P. L. Sclater). **Nyasa Blue Wildebeest.**

1896. *Connochaetes taurinus johnstoni* P. L. Sclater, *Proc. zool. Soc. Lond.* 1896: 616, pl. 28, Oct. Milanje Plain, south end of Lake Shirwa, southern Nyasaland.

Records.—Kwangwazi, Mohoro area, Mpanga area, Selous Reserve; Mkata Plain, Tununguo, Ukami, Ukutu, Wami River; Kisanga; Ifakara, Mahenge, Mahungu; generally distributed in Kilwa, Liwale, Lindi, Masasi, Tunduru and Songea Districts.

GORGON TAURINUS HECKI (Neumann). **Western White-bearded Wildebeest.**

1905. *Connochoetes hecki* Neumann, *S. B. Ges. naturf. Fr. Berl.* 1905: 96. Near Mt. Hanang, Mbulu District, Tanganyika Territory.

1913. *Connochaetes albojubatus lorenzi* Zukowsky, *Arch. Naturgesch.* 79 A (12): 81, pl. 1. Ngorongoro Crater, northern Tanganyika Territory.

1913. *Connochaetes albojubatus schulzi* Zukowsky, *Arch. Naturgesch.* 79 A (12): 82, pl. 2; pl. 3, lower f. Ngorongoro Crater, northern Tanganyika Territory.

1913. *Connochaetes albojubatus henrici* Zukowsky, *Arch. Naturgesch.* 79 A (12): 83, pl. 3, upper f.; pl. 4. Serengeti Plains, northern Tanganyika Territory.

Records.—Lake Eyasi, Mang'ati Plains, Yaide; Sibi River, Wembere Plains; Kitalala, Mihama, Mwanalasa, Somagedi; Nanga River, Sungwizi; common and widespread in Masai west of the Rift Wall, Musoma and Maswa Districts.

GORGON TAURINUS ALBOJUBATUS (Thomas). **Eastern White-bearded Wildebeest.**

1892. *Connochaetes taurinus albojubatus* Thomas, *Ann. Mag. nat. Hist.* 9: 388, May. Athi Plains, central Kenya Colony.

Records.—Mtwaki, Sere Mbuga; Engare Nairobi, Sanya Plains; Masail'nd, generally distributed east of the Rift Wall; Lake Manyara, Mbugwe, Tarangire; east of Kikore, Mrijo.

Subfamily ANTILOPINAE Baird.

Tribe Neotragini Simpson.

Genus OREOTRAGUS A. Smith. Klipspringers.

1834. *Oreotragus* A. Smith, *S. Afr. quart. J.* 2: 212, May. As a subgenus of *Antilope* Pallas; genotype, by original designation, *Antilope (Oreotragus) typicus* A. Smith=*Antilope oreotragus* Zimmermann.

Kiswahili: *mbuci mawe, nguru guru*.

OREOTRAGUS OREOTRAGUS cf. O. O. CENTRALIS Hinton. Northern Rhodesia Klipspringer.

1921. *Oreotragus oreotragus centralis* Hinton, *Ann. Mag. nat. Hist.* 8: 131, July. Southern Chinsali District, Northern Rhodesia.

Records.—Mukalizi, Ndalambo; Chapota, Kalambo Falls, Mpui, Mwimbi.

OREOTRAGUS OREOTRAGUS ACERATOS Noack. Noack's Klipspringer.

1899. *Oreotragus aceratos* Noack, *Zool. Anz.* 22: 11, 16 Jan. Mbemkuru River near its junction with the Kiperere River, within ten miles of 9° 58' S., 38° 29' E., south-eastern Tanganyika Territory.

Records.—On rocky hills near Ligera, Kandulu, Kilimarondo, Matekwe, Lutando, Lumesule River, Mtetesi River, Mkokono, and eastern Songea District.

OREOTRAGUS OREOTRAGUS SCHILLINGSI Neumann. Masai Klipspringer.

1902. *Oreotragus schillingsi* Neumann, *S. B. Ges. naturf. Fr. Berl.* 1902: 170, 172, Nov. Long do Mt., Masai District, northern Tanganyika Territory.

Records.—Genda Genda; Gerevi Hill; Kipindu; generally distributed on suitable rocky hills and scarps in Pare, Moshi (Kilimanjaro up to about 12,500 feet), Arusha, Masai, Mbulu, Kondoa, Mpwapwa, Dodoma, Manyoni, Singida, Iringa, north-eastern Mbeya, Chunya, Musoma, Maswa, Mwanza, Biharamulo, Shinyanga, Nzege, Tabora, Kahama, Buha, and Kigoma Districts.

Genus OUREBIA Laurillard. Oribis.

1841. *Ourebia* Laurillard, in D'Orbigny's *Dict. univ. Hist. nat.* 1: 622. As a subgenus of *Antelope* Pallas; genotype, by subsequent designation (P. L. Sclater and Thomas, 1896, *Book of Antelopes* 2: 13, Jan.), *Antelope scoparia* Schreber=*Antelope ourebi* Zimmermann.

Kiswahili: *taya*.

OUREBIA OUREBI OUREBI (Zimmermann). South African Oribi.

1783. *Antelope Ourebi* Zimmermann, *Geogr. Gesch.* 3: 268. Cape of Good Hope, Cape Province, South Africa.

Records.—Near Kalambo Falls, near Namanyere.

OUREBIA OUREBI cf. O. O. HASTATA (Peters). Peters's Oribi.

1852. *[Antelope] hastata* Peters, *Mith. Ges. naturf. Fr. Berl.* published in the *Speyersche Zig* on 22 Feb.; *Reise Mossamb., Säugeth.*, p. 188, pl. 40; pl. 41, f. 2; pl. 42, f. 2. Sena, south bank of the Zambesi River, Sena District, Portuguese East Africa [17° 28' S., 35° 5' E.].

Records.—In the vicinity of the tributaries of the Mbemkuru and Matandu Rivers in west-central Kilwa, east-central Liwale, and north-central Lindi Districts.

OUREBIA OUREBI UGANDA? de Beaux. Uganda Oribi.

1921. *Ourebia montana ugandae* de Beaux, *Ann. Mus. Civ. Stor. nat. Genova* 49: 223, 31 March. Near Gondokoro, Anglo-Egyptian Sudan.

Records.—Karagwe; Nyamirembe; western Mwanza District.

OUREBIA OUREBI COTTONI Thomas and Wroughton. Powell-Cotton's Oribi.

1908. *Ourebia cottoni* Thomas and Wroughton, *Ann. Mag. nat. Hist.* 1: 178, Feb. Sergoit Hill, 7,000 feet, Uasin Gishu District, Kenya Colony [0° 39' N., 35° 23' E.].

Records.—Basotu, Mang'ora, Ghateshi; Lake Chaya, Itagata, Lusiga Mbuga, Ushuhilo; Ilongero; Chalangwa, Lupa Plateau, Manikonde; Kitario, south of Mara River and north of the line Maji Moto—Suguti Bay; Zagayu; 15 miles south of Kaliua, Kilumbi, Mabana, Tabora.

Genus *RAPHICERUS* H. Smith. **Steinboks, Grysboks.**

1827. *Raphicerus* H. Smith, in Griffith's Cuvier, *Anim. Kingd.* 5: 342. As a subgenus of *Antelope* Pallas; genotype, by subsequent designation (P. L. Sclater and Thomas, 1896, *Book of Antelopes* 2: 33, Jan.), *Antelope campestris* Thunberg.

1906. *Nototragus* Thomas and Schwann, *Abstr. Proc. zool. Soc. Lond.*, no. 27, p. 10, 27 Feb.; *Proc. zool. Soc. Lond.* 1906: 168, 7 June. Genotype, by monotypy and original designation, *Antelope melanotis* Thunberg.

Kiswahili: *dondoro*.

RAPHICERUS CAMPESTRIS NEUMANNI (Matschie). **Tanganyika Steinbok.**

1894. *Pediotragus neumanni* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1894: 122. Near Mt. Hanang (Gurui), Mbulu District, Tanganyika Territory [file Swynnerton and Hayman, 1945: 137].

Records.—Mzukune River; Engare Nairobi, Sanya Plains; Engare Nanyuki, Lake Momela; widespread in Masai District; near Mt. Hanang; Sambala; Mpwapwa, Zoisa; Dodoma, Itiso; Ilongero; west of Mufindi; near Njombe; Lupa Plateau; south of Baridi Hills, Serengeti Plains; south of Lake Victoria; Moru, Shanwa, Zagayu; Wembere Plains; Kilumbi; west of Lake Rukwa, Sala.

RAPHICERUS SHARPEI SHARPEI (Thomas). **Sharpe's Grysbok.**

1897. *Raphicerus sharpei* Thomas, *Proc. zool. Soc. Lond.* 1896: 796, pl. 39, April. Southern Angoniland, Nyasaland.

Records.—Sparsely distributed in Kilwa, Liwale and Lindi Districts; Kirurumo; Luchinde, Mbezuma, between Mbozi and Tunduma, Mukalizi, Ntainene; foot of the Ilunga Range, Ngomba Stream, Zongwe Hill; near Nyamirembe, Kimwani; Kahama District; Kakoma; Butanda; between the Saisi River and Kalambo Falls.

Genus *NESOTRAGUS* von Dueben. **Sunis.**

1845. *Nesotragus* von Dueben, *Ofvers. Vetensk. Akad. Förh., Stockh.* 3: 221. Genotype, by monotypy, *Nesotragus moschatus* von Dueben.

Kiswahili: *paa*.

NESOTRAGUS MOSCHATUS MOSCHATUS von Dueben. **Zanzibar Suni.**

1846. *Nesotragus moschatus* von Dueben, *Ofvers. Vetensk. Akad. Förh., Stockh.* 3: 221. Chapani Islet, west of Zanzibar Island.

Records.—Zanzibar Island and two small neighbouring islets (endemic).

NESOTRAGUS MOSCHATUS KIRCHENPAUERI Pagenstecher. **Mount Meru Suni.**

1885. *Nesotragus Kirchenpaueri* Pagenstecher, *Jb. hamburg wiss. Anst.* 2: 36. Arusha, south-west foot of Mt. Meru, northern Tanganyika Territory.

Records.—Mazamba; Kidenge, Uzaramo; Mkarazi, Morogoro, Tununguo, Ukami; Boydu Islet, Rufiji River delta; Kibongoto, Kilimanjaro; Arusha, Mt. Meru; Ngorongoro; said to be local in Mbulu and Ifinga Districts; Sambala; Mpwapwa; Mafia Island.

NESOTRAGUS LIVINGSTONIANUS Kirk. **Livingstone's Suni.**

1865. *Nesotragus livingstonianus* Kirk, *Proc. zool. Soc. Lond.* 1864: 657, May-Shupanga, south bank of the Zambesi River, Portuguese East Africa [18° 2' S., 35° 0' E.] [vide Moreau, Hopkins and Hayman, 1946: 436.]

Records.—"Sparsely distributed in most of the thicker forests of the Southern Province" [C. J. P. Ionides, *in litt.*].

Genus RHYNCHOTRAGUS Neumann. **Long-snouted Dikdiks.**

1905. *Rhynchotragus* Neumann, *S. B. Ges. naturf. Fr. Berl.* 1905: 88. Genotype, by original designation, *Madoqua guentheri* Thomas.

Kiswahili: *dikidiki, suguya*.

RHYNCHOTRAGUS KIRKII NYIKAE Heller. **Taita Dikdik.**

1913. *Rhynchotragus kirkii nyikae* Heller, *Smithson. misc. Coll.* 1 (7): 3, 31 July. Ndi, 13 miles north of Voi, Taita District, Kenya Colony [3° 14' S., 38° 30' E., 1,000 feet].
Distribution.—Generally distributed in suitable localities in Lu hoto and Pare Districts.

RHYNCHOTRAGUS KIRKII THOMASI Neumann. **Ugozo Dikdik.**

1905. *Rhynchotragus thomasi* Neumann, *S. B. Ges. naturf. Fr. Berl.* 1905: 89. Itiso, northern Ugozo, central Tanganyika Territory.

Records.—Generally distributed in suitable localities in Kilosa, Moshi (including a possible record at 14,000 feet on Kilimanjaro), Arusha, Masai, Mbulu, Kondoa, Mpwapwa, Dodoma, Singida, Manoni, Iringa, north-eastern Mbeya, Chunya (north-east of Lake Rukw), Musoma, Mwanza, Maswa, Biharamul (connected from Busirayombo and Nyamirembe), Shinyanga, Nzega, Kahama, Tabora and, sparsely, Kigoma Districts.

Trb: *Antilopini* Simpson.

Genus AEPYCEROS Sundevall. **Impalas.**

1847. *Aepyceros* Sundevall, *K. svenska Vetensk. Akad. Handl.* 1845: 271. Genotype, by monotypy and original designation *Antelope melampus* Lichtenstein.

Kiswahili: *swala pala*.

AEPYCEROS MELAMPUS JOHNSTONI Thomas. **Nyasaland Impala.**

1893. *Aepyceros melampus johnstoni* Thomas, *Proc. zool. Soc. Lond.* 1892: 553, April. Zomba, southern Nyasaland [15° 24' S., 35° 17' E., ca 3,000 feet].

Records.—Possibly entering Tanganyika in Rungwe, south-western Mbeya and southern Ufipa Districts.

AEPYCEROS MELAMPUS SUARA (Matschie). **Tanganyika Impala.**

1892. *Strepsiceros suara* Matschie, *S. B. Ges. naturf. Fr. Berl.* 1892: 135. Igonda, 37 miles south of Tabora, western Tanganyika Territory.

Distribution.—Widely distributed and generally common throughout the Territory.

Genus LITOCRANIUS Kohl. **Gercenuk, or Waller's Gazelle.**

1886. *Litocranius* Kohl, *Ann. naturh. Hofmus. Wien* 1: 79. Genotype *Gazella walleri* Brooke.

Kiswahili: *swala twiga*.

LITOCRANIUS WALLERI WALLERI (Brooke).

179. *Gazella walleri* Brooke, *Proc. zool. Soc. Lond.* 1878: 929, pl. 56, April. Coast near Juba River, Italian Somaliland [*vide* Hollister, 194: 123].

Distribution.—Widespread and comparatively common in suitable localities in Pare and eastern Masai Districts: Chunge, Kivingo, Mkomazi, Umba Steppe; east of Kikore and Mrijo.

Genus GAZELLA Blainville. **Gazelles.**

1816. *Gazella* Blainville, *Bull. Sci. Soc. Philom., Paris* 1816: 75, May. Genotype, by subsequent designation 'Ogilby', 1837, *Proc. zool. Soc. Lond.* 1836: 137, 27 June, *Antelope dorcas* (Linnaeus). Adopted as the correct generic name for the gazelles [*vide* Opin. int. Comm. zool. Nom., no. 108, in *Smithson. misc. C. II.* 73 (6): 15, 8 June, 1929].

Subgenus *GAZELLA* Blainville.Kiswahili: *swala tomi, lala*.*GAZELLA THOMSONII* THOMSONII Günther. **Thomson's Gazelle.**1884. *Gazella Thomsonii* Günther, *Ann. Mag. nat. Hist.* 14: 427, text-f., Dec. Foot of Kilimanjaro, Kenya Colony or Tanganyika Territory.*Records*.—Plains round the foot of Kilimanjaro and Mt. Meru; general in eastern Masai and Mbulu Districts; Kikore, Ndadya; ? Mlali; Bahi Depression; northern Iramba, Kidaru, Kisingika, Sekenke, Sibiti, Wembere Plains; Huru-huru, Kitlala, Mihama, Mwamalisa, Somagedi.*GAZELLA THOMSONII* BIEDERMANNI (Knottnerus-Meyer)*. **Black-snouted Thomson's Gazelle.**1910. *Eudorcas biedermanni* [sic] Knottnerus-Meyer, *S. B. Ges. naturf. Fr. Berl.* 1910: 111, March, Shirati, east shore of Lake Victoria, Musoma District, northern Tanganyika Territory.*Records*.—Generally distributed in north-west Masai, Musoma, Maswa, Mwanza and Kwimba Districts.Subgenus *NANGER* Lataste.1885. *Nanger Lataste*, *Act. Soc. linn. Bordeaux* 39: 183, 295. Genotype, by monotypy, *Nanger mhorri* (Bennett).Kiswahili: *swala granti*.*GAZELLA GRANTI* GRANTI Brooke. **Grant's Gazelle.**1872. *Gazella granti* Brooke, *Proc. zool. Soc. Lond.* 1872: 602, pl. 41, Nov. Western Nondwa, south-western Dodoma District, Tanganyika Territory.1913. *Gazella granti serengetae* Heller, *Smithson. misc. Coll.* 61 (7): 5, 31 July. Taveta, south-east of Kilimanjaro, Taita District, Kenya Colony [3° 25' S., 37° 40' E., 2,400 to 2,500 feet].*Records*.—Kamakota, Umba Steppe; Sere Mbuga; plains round Kilimanjaro and Mt. Meru; Busi, Kikore, Kiseke, Mrijo, Ndadya; Bahi Depression; Sibiti, Wembere Plains; Pawaga; generally distributed in Pare, eastern Masai, Mbulu Mipwapwa and western Dodoma Districts.*GAZELLA GRANTI* ROBERTSI Thomas. **Wide-horned Grant's Gazelle.**1903. *Gazella granti robertsi* Thomas, *Proc. zool. Soc. Lond.* 1903 (2): 119, text-f. 10, 11, 1 Oct. Near Mwanza, south of Lake Victoria, Tanganyika Territory.*Records*.—Generally distributed in western Masai, Musoma, Maswa and eastern Mwanza Districts.Subfamily *CAPRINAE* Gill.Genus *CAPRA* Linnaeus. **Goats.**1758. *Capra* Linnaeus, *Syst. Nat.*, ed. 10, 1: 68. Genotype *Capra hircus* Linnaeus.Kiswahili: *mbuzi*.*(CAPRA HIRCUS* Linnaeus. **Domesticated Goat.**1758. *Capra Hircus* Linnaeus, *Syst. Nat.*, ed. 10, 1: 68. Sweden.*Status*.—Introduced under domestication.Genus *OVIS* Linnaeus. **Sheep.**1758. *Ovis* Linnaeus, *Syst. Nat.*, ed. 10, 1: 70. Genotype *Ovis aries* Linnaeus.Kiswahili: *kondoo*.*(OVIS ARIES* Linnaeus. **Domesticated Sheep.**1758. *Ovis Aries* Linnaeus, *Syst. Nat.*, ed. 10, 1: 70. Sweden.*Status*.—Introduced under domestication.)* Probably synonymous with *G.t. nasalis* Lönnberg [fide Roosevelt and Heller 1915, ii: 600]. Allen (1939: 527) uses the name *G.t. ruwanae* (Knottnerus-Meyer) for the small race inhabiting the area between Lake Victoria and the Rift Wall; *G.t. biedermanni* has page-priority and is adopted here. The synonyms listed by Allen (*loc. cit.*) under *G.t. ruwanae* should, with *G.t. ruwanae*, be included as synonyms of *G.t. biedermanni* (Knottnerus-Meyer).

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5. GAZETEER OF LOCALITIES

- Amani, Usambara Mts., Tanga, 1,400 to 3,600 feet. 5° 6' S., 38° 38' E.
- Ambangulu, Usambara Mts., Lushoto, 4,250 feet. 5° 5' S., 38° 26' E.
- Amboni, Tanga, sea level. 5° 3' S., 39° 4' E.
- Amboni Caves. See Mkulumuzi Caves.
- Arusha, south foot of Mt. Meru, Arusha, 4,400 feet. 3° 23' S., 36° 43' E.
- Arusha Chini, Moshi, 2,200 to 3,000 feet. 3° 35' S., 37° 20' E.
- Babati, Mbulu, 4,500 feet. 4° 13' S., 35° 44' E.
- Bagamoyo, Bagamoyo, sea-level. 6° 25' S., 38° 54' E.
- Bagiro, north slopes of Uluguru Mts., Morogoro, 5,500 to 6,500 feet. 6° 51' S., 37° 44' E.
- Bahi, Dodoma, 2,700 feet. 6° 0' S., 35° 18' E.
- Bahi Depression, Dodoma and Manyoni, 2,600 feet. 6° 7' S., 35° 10' E.
- Balbal Lolemek, Masai, 4,500 feet. 4° 33' S., 37° 20' E.
- Banagi, Musoma, 4,400 feet. 2° 17' S., 34° 50' E.
- Barabara's, Chunya, 3,900 feet. 8° 12' S., 32° 54' E.
- Baridi Hills, Musoma, 4,000 to 4,600 feet. 2° 2' S., 33° 53' E.
- Barikiwa, Liwale, 2,100 feet. 9° 28' S., 37° 54' E.
- Barungi, Kondoa, 3,500 to 5,000 feet. 5° to 5° 37' S., 35° 40' to 36° 20' E.
- Bashai, Mbulu, 6,400 feet. 4° 0' S., 35° 30' E.
- Basotu, Mbulu, 5,500 feet. 4° 23' S., 35° 5' E.
- Berega, Kilosa, 3,100 feet. 6° 13' S., 37° 10' E.
- Berege, Mpwapwa, 4,100 feet. 6° 30' S., 36° 17' E.
- Bereku Ridge, Kondoa, 5,000 to 5,800 feet. 4° 28' S., 35° 45' E.
- Bicha Lake, Kondoa, 4,950 feet. 4° 56' S., 35° 49' E.
- Biharamulo, Biharamulo, 4,600 feet. 2° 38' S., 31° 19' E.
- Bismarckburg. See Kasanga.
- Bismarck Hut, south-east slopes of Kilimanjaro, Moshi, 8,500 feet. 3° 11' S., 37° 31' E.
- Bogoti, Nguru Mts., Morogoro, 2,000 feet. 6° 20' S., 37° 25' E.
- Bomole Hill, Usambara Mts., Tanga, 3,700 feet. 5° 6' S., 38° 38' E.
- Boydut Islet, Rufiji, sea-level. 7° 52' S., 39° 32' E.
- Bubu River, Mbulu, Kondoa and Dodoma, 7,000 to 2,600 feet. From 4° 25' S., 35° 27' E. to 6° 5' S., 35° 15' E.
- Buhoro Flats, Mbeya, 3,700 feet. 8° 30' S., 34° 25' E.
- Bukine, North Mara, 4,000 to 4,500 feet. 1° 12' S., 34° 6' E.
- Bukoba, Bukoba, 3,720 feet. 1° 21' S., 31° 48' E.
- Bumbiri Island, Bukoba, 3,717 to 4,100 feet. 1° 38' S., 31° 52' E.
- Bumbuli, Usambara Mts., Lushoto, 2,000 feet. 4° 52' S., 38° 27' E.
- Bumpeke, Mwanza, 4,600 feet. 3° 4' S., 32° 20' E.
- Bunduki, Uluguru Mts., Morogoro, 5,000 feet. 7° 2' S., 37° 38' E.
- Bungu, Lushoto, 4,000 feet. 5° 2' S., 38° 24' E.
- Bunua. See Ibunua.
- Burigi, Kahama, 3,900 feet. 3° 37' S., 32° 40' E.
- Busi, Kondoa, 3,800 feet. 4° 51' S., 36° 3' E.
- Busirayombo, Biharamulo, 3,750 feet. 2° 47' S., 31° 47' E.
- Butanda, Kigoma, 3,400 feet. 4° 59' S., 31° 15' E.
- Chada Lake, Mpanda, 2,900 feet. 6° 58' S., 31° 17' E.
- Chake Chake, Pemba Island, sea-level. 5° 13' S., 39° 45' E.
- Chalangwa, Chunya, 5,800 feet. 8° 40' S., 33° 35' E.

- Chamliho Hill, Musoma, 4,800 to 5,750 feet.
1° 57' S., 34° 8' E.
- Chanzeru, Kilosa, 1,600 feet. 6° 53' S.,
37° 5' E.
- Chapani Islet, Zanzibar, sea-level. 6° 8' S.,
39° 12' E.
- Chapota, Ufipa, 5,100 feet. 8° 16' S.,
31° 15' E.
- Chaya Lake, Manyoni, 4,200 feet. 5° 37' S.,
34° 3' E.
- Chipoka Falls, Chunya, 3,000 feet. 8° 27' S.,
33° 2' E.
- Chipogolo, Mpwapwa, 2,800 feet. 6° 52' S.,
36° 3' E.
- Chui, Chunya, 2,630 feet. 8° 11' S., 32°
41' E.
- Chulo River, Singida. Not located.
- Chunge, Lushoto, 2,000 feet. 4° 20' S.,
38° 19' E.
- Chunya, Chunya, 4,700 feet. 8° 32' S.,
33° 25' E.
- Chunyu, Mpwapwa, 2,800 feet. 6° 18' S.,
36° 20' E.
- Chwaka, Zanzibar Id, sea-level. 6° 10' S.,
39° 25' E.
- Dabaga, Uzungwa Mts., Iringa, 6,000 feet.
8° 7' S., 35° 55' E.
- Dakawa, Morogoro, 1,500 feet. 7° 27' S.,
37° 44' E.
- Dar es Salaam, Uzaramo, sea-level. 6° 48' S.,
39° 18' E.
- Derema. *See* Ndarema.
- Dilangilo, Uzaramo, 500 feet. 6° 48' S.,
38° 54' E.
- Dodoma, Dodoma, 3,700 feet. 6° 11' S.,
35° 45' E.
- Dombolo, Singida. Not located.
- Dönyo Ngai. *See* Ol Doinyo Lengai.
- Dönyo Ngaptuk. *See* Longido Mt.
- Dongobesh, Mbulu, 7,000 feet. 4° 5' S.,
35° 25' E.
- Duma R., Maswa and Mwanza, 5,500 to 4,000
feet. From 2° 40' S., 34° 40' E. to 2° 35' S.,
33° 28' E.
- Dunda, Bagamoyo, 100 feet. 6° 31' S.,
38° 48' E.
- Durumo River, Singida, 7,000 to 3,400 feet.
From 4° 0' S., 35° 25' E. to 3° 53' S.,
34° 38' E.
- Emin Pasha Gulf, Mwanza and Biharamulo,
3,717 feet. 2° 35' S., 31° 50' E.
- Endamarid R., east slopes of Mt. Hanang,
Mbulu, 9,000 to 6,000 feet. 4° 28' S.,
35° 25' E.
- Engare Mbusse. *See* Ormasse River.
- Engare Olmotoni, Arusha, 5,000 to 4,000 feet.
3° 22' S., 36° 36' E.
- Engare Nairobi, west foot of Kilimanjaro,
Moshi, 4,000 to 5,000 feet. 3° 5' S.,
37° 0' E.
- Engare Nanyuki, north foot of Mt. Meru,
Arusha, 4,000 to 5,000 feet. 3° 10' S.,
36° 50' E.
- Engaruka, Masai, 3,000 feet. 2° 59' S.,
35° 58' E.
- Eyasi Lake, Singida, Maswa, Masai and
Mbulu, 3,380 feet. 3° 40' S., 35° 0' E.
- Farkwa, Kondoa, 3,900 feet. 5° 24' S.,
35° 37' E.
- Fufuni, Pemba Id., sea-level. 5° 27' S.,
39° 42' E.
- Fungwe Forest, Livingstone Mts., Njombe,
7,000 feet. 9° 20' S., 34° 0' E.
- Galagala R., Buha, 4,500 feet. 3° 52' S.,
30° 40' E.
- Gelai Mt., Masai, 2,500 to 9,650 feet. 2°
37' S., 36° 7' E.
- Genda Genda, Pangani, 1,500 to 1,727 feet.
5° 34' S., 38° 38' E.
- Gerevi Hill, Lushoto, 1,300 feet. 4° 30' S.,
38° 33' E.
- Ghatesh, Mbulu, 5,700 feet. 4° 31' S.,
35° 23' E.
- Girihini, Tanga, 450 feet. 4° 56' S., 38°
54' E.
- Gombe R., Nzega, Tabora and Kigoma,
4,200 to 3,400 feet. From 4° 26' S.,
33° 15' E., to 4° 59' S., 30° 57' E.
- Gonda. *See* Igonda.
- Gongwe, Mpanda, 3,200 feet. 6° 37' S.,
31° 7' E.
- Gonja, Pare, 2,800 feet. 4° 21' S., 38° 3' E.
- Gross Aruscha. *See* Arusha.
- Grumeti R., Musoma, 6,500 to 3,850 feet.
From 1° 45' S., 35° 15' E. to 2° 4' S.,
37° 57' E.
- Gugu R., Maswa, 4,500 feet. 3° 35' S.,
34° 35' E.
- Gulwe, Mpwapwa, 2,800 feet. 6° 28' S.,
36° 24' E.
- Gurui. *See* Hanang Mt.
- Guta, Musoma, 3,720 feet. 2° 5' S., 33°
44' E.
- Gwao's. *See* Ikungi.
- Hanang Mt., Mbulu, 6,000 to 11,215 feet.
4° 26' S., 35° 24' E.
- Handajega, Maswa, 3,900 feet. 2° 17' S., 34°
4' E.
- Haneti, Dodoma, 4,000 feet. 5° 29' S.,
35° 53' E.
- Hohenlohe-Graben. *See* Yaida Depression.
- Huruhuru Mbuga, Shinyanga, 3,900 feet.
3° 27' S., 33° 10' E.
- Iboma, Chunya, 2,650 feet. 8° 10' S.,
32° 39' E.
- Ibunua, Manyoni, 4,300 feet. 5° 36' S.,
34° 36' E.
- Ifakara, Ulanga, 1,000 feet. 7° 42' S.,
37° 1' E.
- Ifume River, Ufipa and Mpanda, 4,500 to
2,534 feet. From 7° 20' S., 30° 57' E.,
to 6° 44' S., 30° 25' E.
- Igali, Poroto Mts., Mbeya, 6,000 feet. 9°
3' S., 33° 25' E.
- Igigwa, Tabora, 3,800 feet. 5° 26' S., 32°
52' E.
- Igonda, Tabora, 3,725 feet. 5° 32' S.,
32° 40' E.
- Igundu, Shinyanga, 3,700 feet. 3° 45' S.,
32° 52' E.
- Ihanganya, Uzungwa Mts., Iringa, 6,000 feet.
8° 4' S., 35° 48' E.

- Ihangiro, Bukoba, 3,800 to 5,100 feet. 1° 50' S., 31° 25' E.
 Ihila, Kigoma, 4,600 feet. 5° 19' S., 30° 47' E.
 Ikiyuyu, Mpwapwa, 3,900 feet. 6° 47' S., 36° 25' E.
 Ikoma, Musoma, 4,000 feet. 2° 5' S., 34° 38' E.
 Ikungi, Singida, 4,700 feet. 5° 7' S., 34° 47' E.
 Ilonga, Kilosa, 2,000 feet. 6° 46' S., 37° 2' E.
 Ilolo, Rungwe, 4,600 feet. 9° 10' S., 33° 35' E.
 Ilunga Range, Chunya, 4,000 to 5,400 feet. 8° 20' S., 33° 5' E.
 Ipeme, Uzungwa Mts., Iringa, 6,500 feet. 8° 25' S., 35° 23' E.
 Ipeta Mbuga, Ufipa, 5,200 feet. 8° 15' S., 31° 20' E.
 Irangi, Kondo, 3,900 to 7,000 feet. 4° 12' to 5° 6' S., 35° 40' to 36° 55' E.
 Iringa, Iringa, 5,400 feet. 7° 47' S., 35° 42' E.
 Isabi, Kondo, 5,400 feet. 4° 40' S., 35° 48' E.
 Isikisia, Tabora, 4,200 feet. 4° 53' S., 33° 7' E.
 Itale (Itari), Biharamulo, 3,750 feet. 2° 36' S., 31° 45' E.
 Itagata, Manyoni, 4,600 feet. 5° 48' S., 34° 20' E.
 Itende, Mpwapwa, 3,600 feet. 6° 44' S., 36° 33' E.
 Itewe, Chunya, 4,700 to 5,300 feet. 8° 35' S., 33° 25' E.
 Itigi Thicket, Manyoni, 3,900 to 4,400 feet. 5° 30' to 5° 55' S., 34° to 35° E.
 Itiso, Dodoma, 3,900 to 5,500 feet. 5° 40' S., 36° 0' E.
 Itumba, Manyoni, 4,000 to 5,300 feet. 6° 32' S., 33° 50' E.
 Jipe Lake, Pare, 2,298 feet. 3° 35' S., 37° 45' E.
 Jumbe Salim Risasi's, Songea, 3,200 feet. 10° 36' S., 36° 30' E.
 Kabale, Bukoba, 4,200 feet. 1° 19' S., 31° 44' E.
 Kachungu, Ufipa or Mpanda. Not located.
 Kadala. See Ndala.
 Kafisia, Mpanda, 2,800 feet. 6° 42' S., 30° 27' E.
 Kagongwa, Shinyanga, 3,900 feet. 3° 37' S., 33° 8' E.
 Kahama, Kahama, 4,200 feet. 3° 49' S., 32° 36' E.
 Kahe, Moshi, 2,260 feet. 3° 30' S., 37° 27' E.
 Kainam, Mbulu, 6,000 feet. 3° 55' S., 35° 35' E.
 Kakindu, Bukoba, 3,900 feet. 1° 10' S., 31° 29' E.
 Kakoma, Tabora, 3,900 feet. 5° 47' S., 32° 26' E.
 Kalambo Falls, Ufipa, 4,000 feet. 8° 35' S., 31° 13' E.
 Kalambo River, Ufipa, 5,700 to 2,534 feet. From 7° 50' S., 31° 13' E., to 8° 35' S., 31° 10' E.
 Kaliua, Tabora, 3,500 feet. 5° 5' S., 31° 47' E.
 Kalole, Mpanda, 3,800 feet. 6° 41' S., 32° 8' E.
 Kamakota, Lushoto, 1,900 feet. 4° 14' S., 38° 25' E.
 Kambi ya Simba, Pare, 2,700 feet. 4° 5' S., 37° 50' E.
 Kampisa River, Mpanda, 4,500 to 4,000 feet. 6° 15' S., 29° 58' E.
 Kandalu, Tunduru, 2,000 feet. 10° 46' S., 37° 12' E.
 Kanemweni, Ufipa, 5,700 feet. 9° 5' S., 32° 0' E.
 Kanga, Morogoro, 1,900 feet. 6° 1' S., 37° 46' E.
 Kang'ata, Handeni, 300 feet. 4° 56' S., 38° 56' E.
 Kantesya River, Mbeya, 6,000 to 5,000 feet. 9° 15' S., 33° 0' E.
 Kanyenye. See Nondwa.
 Kapalagulu Mt., Kigoma, 5,000 feet. 5° 52' S., 30° 2' E.
 Karagwe, Bukoba, 4,000 to 5,500 feet. 1° 15' S., 31° 50' E.
 Karema, Mpanda, 2,540 feet. 6° 50' S., 30° 50' E.
 Karumo, Mwanza, 3,750 feet. 2° 31' S., 32° 48' E.
 Karusenyi, Musoma, 4,000 feet. 1° 49' S., 33° 37' E.
 Kasanga, Ufipa, 2,540 feet. 8° 27' S., 31° 9' E.
 Kasulu, Buha, 4,100 feet. 4° 34' S., 30° 6' E.
 Katani Boga. See Katavi Plain.
 Katavi Plain, Mpanda, 3,200 feet. 6° 30' to 7° 0' S., 31° 0' E.
 Katumbiki River, Tabora and Mpanda, 3,700 to 3,450 feet. From 6° 12' S., 32° 20' E., to 5° 47' S., 32° 3' E.
 Kavuu River, Mpanda, 2,900 to 2,602 feet. From 7° 0' S., 31° 17' E. to 7° 41' S., 31° 52' E.
 Kawewe's. See Igigwa.
 Kiantwara, Bukoba, 4,000 feet. 1° 20' S., 31° 45' E.
 Kibaya, Masai, 5,300 feet. 5° 17' S., 36° 34' E.
 Kibiti, Rufiji, 550 feet. 7° 41' S., 39° 55' E.
 Kibongoto, south-west foot of Kilimanjaro, Moshi, 4,500 feet. 3° 12' S., 37° 7' E.
 Kiboriani Mts., Mpwapwa, 4,000 to 6,400 feet. 6° 17' S., 36° 30' E.
 Kibosho, south foot of Kilimanjaro, Moshi, 4,300 feet. 3° 14' S., 37° 18' E.
 Kibwesa, Mpanda, 2,550 feet. 6° 30' S., 29° 58' E.
 Kidaru, Singida, 3,800 feet. 4° 5' S., 34° 30' E.
 Kidenge, Mpwapwa, 4,000 feet. 6° 45' S., 36° 31' E.
 Kidenge, Uzaramo, 550 feet. 6° 46' S., 38° 58' E.
 Kidete, Kilosa, 2,100 feet. 6° 39' S., 36° 42' E.
 Kifarua, Pare, 2,900 feet. 3° 35' S., 37° 33' E.
 Kiganga, Iringa, 3,900 feet. 7° 43' S., 34° 57' E.

- Kigogo, Uzungwa Mts., Iringa, 6,000 feet. 8° 37' S., 35° 15' E.
- Kigoma, Kigoma, 2,600 feet. 4° 52' S., 29° 38' E.
- Kigwa, Tabora, 4,200 feet. 5° 8' S., 33° 10' E.
- Kigwe, Dodoma, 3,000 feet. 6° 6' S., 35° 29' E.
- Kihinde, Kilwa, 800 feet. 9° 50' S., 38° 50' E.
- Kihuma, Liwale, 1,800 feet. 9° 13' S., 37° 57' E.
- Kija, Buha, 4,500 feet. 3° 55' S., 30° 35' E.
- Kikore, Kondoa, 4,200 feet. 4° 22' S., 35° 50' E.
- Kikuyu, Dodoma, 3,800 feet. 6° 11' S., 35° 43' E.
- Kilambwezi, Ufipa, 5,200 feet. 9° 5' S., 32° 3' E.
- Kilimanjaro, Moshi, 3,000 to 19,565 feet. 2° 45' to 3° 20' S., 37° 55' to 38° 40' E.
- Kilimarondo, Masasi, 1,800 feet. 10° 32' S., 38° 6' E.
- Kilimatinde, Manyoni, 3,600 feet. 5° 32' S., 34° 57' E.
- Kilindi, Handeni, 3,000 feet. 5° 40' S., 37° 34' E.
- Kilinga Stream, Chunya, 3,500 to 2,602 feet. 8° 22' S., 32° 52' E.
- Kilombero River, Ulanga, 1,000 to 600 feet. From 9° 0' S., 36° 0' E., to 8° 10' S., 37° 0' E.
- Kilonito, Masai, 2,100 feet. 2° 30' S., 36° 0' E.
- Kilosa, Kilosa, 1,600 feet. 6° 51' S., 36° 59' E.
- Kilumbi, Tabora, 4,800 feet. 6° 17' S., 33° 51' E.
- Kilwa, Kilwa, sea-level. 8° 45' S., 39° 25' E.
- Kilwa Kisiwani, Kilwa, sea-level. 8° 57' S., 39° 32' E.
- Kimali, Maswa, 4,300 feet. 3° 23' S., 34° 28' E.
- Kimamba, Kilosa, 1,700 feet. 6° 48' S., 37° 8' E.
- Kimatu, Manyoni, 4,500 feet. 6° 11' S., 34° 37' E.
- Kimbande, Songea, 1,500 feet. 11° 30' S., 36° 10' E.
- Kimugai Lake, Mpwapwa, 2,500 feet. 6° 29' S., 36° 30' E.
- Kimwani, Biharamulo, 3,900 feet. 2° 10' S., 31° 40' E.
- Kingani River. *See* Kingoni River
- Kingolwira, Morogoro, 1,485 feet. 6° 40' S., 37° 47' E.
- Kingoni Ferry, Bagamoyo, sea-level. 6° 27' S., 38° 49' E.
- Kingoni (lower Ruw) River, Bagamoyo, 600 feet to sea-level. 6° 35' S., 38° 45' E.
- Kingori Juu, Moshi and Arusha, 4,000 to 5,000 feet. 3° 10' S., 36° 58' E.
- Kinole, north slopes of Uluguru Mts., Morogoro, 2,500 to 5,000 feet. 6° 50' S., 37° 42' E.
- Kipembawe, Chunya, 5,500 feet. 7° 39' S., 33° 23' E.
- Kipera, Kilosa, 1,700 feet. 6° 56' S., 36° 56' E.
- Kiperere, Liwale, 1,000 feet. 9° 50' S., 38° 30' E.
- Kipindu, Bagamoyo, 1,700 feet. 6° 0' S., 38° 0' E.
- Kiria, Pare, 2,100 feet. 3° 53' S., 37° 30' E.
- Kirurumo, Manyoni, 4,700 feet. 5° 53' S., 34° 12' E.
- Kisa, Ufipa, 3,000 feet. 7° 50' S., 31° 45' E.
- Kisaki, Morogoro, 670 feet. 7° 25' S., 37° 35' E.
- Kisanga, Kilosa, 2,900 feet. 7° 23' S., 36° 44' E.
- Kisauke, Bagamoyo, 200 feet. 6° 12' S., 38° 45' E.
- Kisawasawa, Ulanga, 950 feet. 7° 50' S., 36° 56' E.
- Kiserawe, Uzaramo, 550 feet. 6° 53' S., 39° 3' E.
- Kisese, Kondoa, 4,200 feet. 4° 29' S., 35° 50' E.
- Kisima, Mpwapwa, 3,000 feet. 7° 2' S., 36° 2' E.
- Kisigo River, Manyoni, Dodoma and Iringa, 4,400 to 2,400 feet. From 5° 4' S., 34° 35' E. to 7° 5' S., 35° 50' E.
- Kisingika, Singida, 3,800 feet. 5° 3' S., 34° 3' E.
- Kisiwani, Pare, 2,600 feet. 4° 8' S., 37° 57' E.
- Kisokwe, Mpwapwa, 4,000 feet. 6° 17' S., 36° 27' E.
- Kisongo, Masai, 3,900 to 4,600 feet. 3° 25' S., 36° 25' E.
- Kitalala, Shinyanga, 3,450 feet. 3° 59' S., 34° 3' E.
- Kitamuli Hill, Pare, 2,800 to 3,600 feet. 4° 4' S., 37° 39' E.
- Kitaya, Mikindani, 300 feet. 10° 48' S., 40° 10' E.
- Kitesa Forest, Matengo Hills, Songea, 6,500 feet. 11° S., 34° 55' E.
- Kitete, Masai, 3,300 feet. 3° 15' S., 35° 55' E.
- Kitumbini Forest, Lindi, 500 feet. 9° 38' S., 39° 32' E.
- Kitungulu, Ufipa, 4,500 feet. 8° 28' S., 31° 19' E.
- Kivingo, Lushoto, 1,400 feet. 4° 29' S., 38° 29' E.
- Kizerui, Usambara Mts., Lushoto, 4,000 feet. 4° 58' S., 38° 40' E.
- Kizi, Ufipa, 4,500 feet. 7° 11' S., 31° 2' E.
- Kiziba, Bukoba, 3,800 to 4,200 feet. 1° 13' S., 31° 30' E.
- Kizumbi, Shinyanga, 3,900 feet. 3° 43' S., 33° 25' E.
- Klein Arusha. *See* Arusha Chini.
- Koma, Mwanza. Not located.
- Kome Island, Lake Victoria, Mwanza, 3,717 to 4,000 feet. 2° 20' S., 32° 30' E.
- Kondoa, Kondoa, 4,500 feet. 4° 55' S., 35° 47' E.
- Kongwa, Mpwapwa, 3,100 feet. 6° 11' S., 36° 25' E.
- Konko, Manyoni, 3,900 feet. 6° 20' S., 34° 57' E.
- Korogwe, Lushoto, 963 feet. 5° 10' S., 38° 29' E.
- Kungwe Mt., Mpanda, 2,600 to 8,250 feet. 6° 8' S., 29° 48' E.
- Kwa Mtoro, Kondoa, 4,000 feet. 5° 14' S., 35° 26' E.

- Kwangwazi, Rufiji, 400 feet. 7° 47' S., 38° 15' E.
 Kwa Tisso. *See* Itiso.
 Kwazi River, Tabora, 3,900 feet. 6° 20' S., 33° 0' E.
 Kwimba Hill, Chunya, 4,700 to 5,500 feet. 8° 10' S., 32° 47' E.
 Lalago, Maswa, 3,800 feet. 3° 27' S., 33° 55' E.
 Lendanai, Masai, 5,000 feet. 4° 5' S., 37° 5' E.
 Lihangwa River, Liwale, 1,200 feet. 8° 40' S., 38° 23' E.
 Liger, Songea, 3,200 feet. 10° 57' S., 35° 56' E.
 Lindi, Lindi, sea-level. 10° 0' S., 39° 45' E.
 "Little Lake Windermere." *See* Lwelo Lake.
 Liwale, Liwale, 1,900 feet. 9° 47' S., 37° 58' E.
 Logi, Dodoma, 2,700 feet. 7° 0' S., 36° 0' E.
 Loiborsoit, Masai, 4,900 feet. 3° 46' S., 36° 27' E.
 Loibene, Masai, 3,500 to 6,200 feet. 3° 57' S., 37° 7' E.
 Lolkidong'oi, Masai, 4,500 feet. 4° 57' S., 36° 35' E.
 Lolkisale, Masai, 5,100 to 6,995 feet. 3° 46' S., 36° 24' E.
 Longido Mt., Masai, 5,000 to 8,576 feet. 2° 42' S., 36° 43' E.
 Losimingur Mt., Masai, 4,000 to 7,000 feet. 3° 25' S., 36° 4' E.
 Lossogonoj Plateau, Masai, 3,000 to 5,000 feet. 4° 0' S., 37° 15' E.
 Luchinde, Mbeya, 5,000 feet. 9° 7' S., 32° 22' E.
 Ludilo, Uzungwa Mts., Iringa, 6,500 feet. 8° 20' S., 35° 15' E.
 Luengera River, Usambara Mts., Lushoto, 4,000 to 950 feet. From 4° 40' S., 38° 35' E. to 5° 11' S., 38° 31' E.
 Lugala Hills, Mpanda, 4,000 to 6,000 feet. 6° 25' S., 30° 40' E.
 Lugufu, Kigoma, 4,700 feet. 5° 33' S., 30° 33' E.
 Luhira, Songea, 3,800 feet. 10° 37' S., 35° 38' E.
 Luhombero River, Ulanga, 3,000 to 900 feet. From 9° 20' S., 36° 25' E. to 8° 30' S., 37° 15' E.
 Luiche Scarp, Kigoma, 2,700 feet. 4° 53' S., 29° 45' E.
 Luika, Chunya, 3,500 feet. 8° 22' S., 32° 54' E.
 Lukangazi, north foot of Uluguru Mts., Morogoro, 2,000 feet. 6° 51' S., 37° 53' E.
 Lulambu, Pare, 2,100 feet. 4° 25' S., 37° 52' E.
 Lumi River, east slopes of Kilimanjaro, Moshi, 10,000 to 3,000 feet. 3° 10' S., 37° 40' E.
 Lunguma Mt., Mpanda, 5,500 feet. 6° 16' S., 30° 0' E.
 Lupa Plateau, Chunya, 3,000 to 5,500 feet. 7° 0' to 8° 35' S., 32° 35' to 33° 40' E.
 Lupembe, Njombe, 5,100 feet. 9° 18' S., 35° 14' E.
 Lupiro, Ulanga, 1,500 feet. 8° 25' S., 36° 38' E.
 Lushoto, Usambara Mts., Lushoto, 4,500 to 5,000 feet. 4° 47' S., 38° 17' E.
 Lusiga Mbuga, Manyoni, 3,800 feet. 6° 17' S., 34° 52' E.
 Lutamba Lake, Lindi, 500 feet. 10° 2' S., 39° 27' E.
 Lutando, Masasi, 1,200 feet. 10° 37' S., 38° 32' E.
 Lutindi Hill, Usambara Mts., Lushoto, 2,500 feet. 4° 54' S., 38° 37' E.
 Luvuna, Uzungwa Mts., Iringa, 6,300 feet. 8° 35' S., 35° 20' E.
 Luwegu River, Songea and Ulanga, 3,000 to 1,000 feet. From 10° 3' S., 36° 0' E. to 9° 0' S., 37° 23' E.
 Lwelo Lake, Bukoba, 4,900 feet. 2° 0' S., 30° 57' E.
 Lyamungu, south foothills of Kilimanjaro, Moshi, 4,200 feet. 3° 15' S., 37° 14' E.
 Mabama, Tabora, 3,800 feet. 5° 8' S., 32° 30' E.
 Machame, south foothills of Kilimanjaro, Moshi, 4,400 feet. 3° 15' S., 37° 13' E.
 Machanta Hill, Maswa, 4,900 to 5,600 feet. 2° 40' S., 34° 25' E.
 Madehani, Livingstone Mts., Njombe, 7,000 feet. 9° 20' S., 34° 1' E.
 Madizini, Kilosa, 2,200 feet. 7° 13' S., 36° 47' E.
 Mafia Island, off Rufiji River delta, sea-level. 7° 37' to 8° 3' S., 39° 35' to 39° 55' E.
 Mafisi, Uzaramo, 250 feet. 6° 58' S., 38° 38' E.
 Mafisi Fahre. *See* Mafisi.
 Mafwemera Mts., Mpwapwa, 4,000 to 6,900 feet. 6° 50' S., 36° 35' E.
 Magamba, Usambara Mts., Lushoto, 5,000 feet. 4° 45' S., 38° 17' E.
 Magoroto Hill, Tanga, 3,000 feet. 5° 7' S., 38° 45' E.
 Maguu, Songea, 5,000 feet. 11° 0' S., 34° 54' E.
 Mahaha, Maswa, 4,400 feet. 3° 8' S., 33° 52' E.
 Mahaka, Manyoni, 2,900 feet. 6° 11' S., 35° 4' E.
 Mahari Mts., Mpanda, 3,000 to 8,200 feet. 6° 15' S., 29° 50' E.
 Mahenge, Ulanga, 3,200 feet. 8° 40' S., 36° 42' E.
 Mahindi. *See* Kihinde.
 Mahungoi, Ulanga, 1,000 feet. 8° 40' S., 37° 18' E.
 Mahura, Ulanga, 900 feet. 8° 30' S., 37° 10' E.
 Maji Moto, Musoma, 4,400 feet. 1° 38' S., 34° 20' E.
 Makakala, Handeni, 3,000 feet. 5° 38' S., 37° 34' E.
 Makanganga, Chunya, 5,200 feet. 7° 27' S., 33° 43' E.
 Makasuku, Manyoni, 2,800 feet. 6° 0' S., 36° 0' E.
 Makata, Liwale, 2,000 feet. 9° 43' S., 37° 54' E.
 Makere, Buha, 4,000 feet. 4° 17' S., 30° 25' E.
 Makoko, Mbeya, 5,000 feet. 7° 56' S., 33° 40' E.
 Makongolozhi, Chunya, 3,750 feet. 8° 24' S., 33° 8' E.

- Makumba, Kilwa, 400 feet. 9° 37' S., 39° 15' E.
 Makutapora, Dodoma, 3,700 feet. 5° 59' S., 35° 44' E.
 Malagarasi River, Buha, Tabora and Kigoma, 5,000 to 2,534 feet. From 4° 15' S., 30° 0' E. to 5° 15' S., 29° 50' E.
 Maleza, Chunya, 2,700 feet. 8° 26' S., 32° 54' E.
 Malinyi, Ulanga, 1,100 feet. 8° 57' S., 36° 2' E.
 Maliwe Lake, Kilwa, 300 feet. 8° 49' S., 39° 2' E.
 Malolo, Kilosa, 3,000 feet. 7° 21' S., 36° 36' E.
 Malonje, Ufipa, 6,000 to 7,900 feet. 8° 3' S., 31° 43' E.
 Mamboya, Kilosa, 3,600 feet. 6° 18' S., 37° 5' E.
 Mambwe, Ufipa, 5,000 to 6,200 feet. 8° 40' S., 31° 30' E.
 Manda, Njombe, 1,570 feet. 10° 28' S., 34° 35' E.
 Mandra, Bagamoyo, 600 feet. 5° 47' S., 38° 23' E.
 Mangasini=Magazini. *See* Kwa Mtoro.
 Mang'ati, Mbulu, 4,800 to 5,800 feet. 4° 35' S., 35° 25' E.
 Mangogo, Ufipa or Mpanda. Not located.
 Mang'ora, Mbulu, 3,450 feet. 3° 35' S., 35° 17' E.
 Manikonde, Chunya, 5,000 feet. 7° 26' S., 32° 26' E.
 Manja, Pangani. Not located.
 Mansimba, Nzege, 3,900 feet. 4° 6' S., 33° 22' E.
 Mantuyu, Handeni. Not located.
 Manyamba. *See* Nanyamba.
 Manyara Lake, Mbulu, 3,150 feet. 3° 30' S., 35° 50' E.
 Manyata, Kondo, 4,000 feet. 5° 10' S., 35° 45' E.
 Manyoni, Manyoni, 4,100 feet. 5° 45' S., 34° 51' E.
 Mara River, Musoma and North Mara, 4,790 to 3,717 feet. From 1° 34' S., 35° 0' E. to 1° 31' S., 33° 55' E.
 Marang'ombe Mbuga, Buha, 3,600 feet. 4° 0' S., 30° 35' E.
 Marangu, southeast slopes of Kilimanjaro, Moshi, 3,500 to 7,000 feet. 3° 18' S., 37° 32' E.
 Masai Steppe (Lounberg, 1910). *See* Kingori Juu.
 Masimani, Parc, 2,000 to 4,200 feet. 4° 13' S., 37° 35' E.
 Masimba, north slopes of Uluguru Mts., Morogoro, 2,100 feet. 6° 55' S., 37° 45' E.
 Matandu River, Liwale and Kilwa, 1,800 feet to sea-level. From 9° 25' S., 37° 30' E. to 8° 40' S., 39° 20' E.
 Marapwa, Lindi, 500 feet. 9° 42' S., 39° 26' E.
 Matekwé, Masasi, 1,500 feet. 10° 35' S., 38° 20' E.
 Matengo Hills, Songea, 4,000 to 6,000 feet. 10° 55' S., 34° 52' E.
 Matomondo, Nguru Mts., Morogoro, 6,000 feet. 6° 8' S., 37° 28' E.
 Matomondo River, Mpwapwa, 5,000 to 2,500 feet. 6° 25' S., 36° 34' E.
 Matonya, Kondo, 4,000 feet. 5° 7' S., 35° 31' E.
 Matungu, Handeni. Not located.
 Matwiga, Ufipa or Mpanda. Not located.
 Maurui, Lushoto, 1,100 feet. 5° 8' S., 38° 24' E.
 Mawele, Tabora, 3,800 feet. 5° 22' S., 32° 50' E.
 Mawoga, Chunya, 3,500 feet. 8° 23' S., 33° 6' E.
 Mbala, Kilosa, 3,000 feet. 7° 33' S., 36° 38' E.
 Mbamba Bay, Songea, 1,570 feet. 11° 18' S., 34° 45' E.
 Mbanja, Lindi, 300 feet. 9° 52' S., 39° 43' E.
 Mbarawala Forest, Kilwa, 600 to 1,000 feet. 9° 26' S., 39° 17' E.
 Mbasi Creek, Rungwe, 1,570 feet. 9° 36' S., 33° 58' E.
 Mbemkuru River, Masasi, Liwale, Lindi and Kilwa, 3,000 feet to sea-level. From 10° 20' S., 37° 40' E. to 9° 30' S., 39° 40' E.
 Mbeya, Mbeya, 5,500 feet. 8° 54' S., 33° 26' E.
 Mbeya Mt., Mbeya, 4,000 to 8,200 feet. 8° 50' S., 33° 25' E.
 Mbezuma, Mbeya, 5,200 feet. 9° 23' S., 32° 52' E.
 Mbigiri, Masai, 4,400 feet. 5° 18' S., 36° 40' E.
 Mboma Hill. *See* Mwanza.
 Mbono, Singida, 4,900 feet. 4° 45' S., 34° 45' E.
 Mbozi, Mbeya, 5,200 feet. 9° 2' S., 33° 0' E.
 Mbulu, Mbulu, 5,800 feet. 3° 51' S., 35° 32' E.
 Mbulu's. *See* Msogaa.
 Mbuni, Rufiji, 100 feet. 7° 56' S., 39° 13' E.
 Mbweni, Kilosa, 1,500 feet. 6° 52' S., 36° 58' E.
 Mdando, Njombe, 6,000 to 7,000 feet. 9° 47' S., 34° 50' E.
 Mdjengo's. *See* Misinko.
 Meatu, Maswa, 4,000 to 5,500 feet. 3° 30' S., 34° 25' E.
 Mekunde, Tanga, 400 feet. 4° 48' S., 39° 2' E.
 Meru Mt., Arusha, 5,000 to 14,900 feet. 3° 15' S., 36° 45' E.
 Meserani Dam, Masai, 3,900 feet. 3° 31' S., 36° 26' E.
 Meswa, Mwanza, 3,730 feet. 2° 50' S., 32° 57' E.
 Mfi, Ufipa, 5,800 feet. 9° 54' S., 31° 42' E.
 Mfika, Iringa, 3,000 to 5,000 feet. 9° 16' S., 35° 18' E.
 Mgandu, Manyoni, 5,000 feet. 6° 0' S., 34° 5' E.
 Mgera, Handeni, 3,500 feet. 5° 26' S., 37° 32' E.
 Mgeta, Morogoro, 3,800 feet. 7° 3' S., 37° 35' E.
 Mgunda Mgali. *See* Itigi Thicket.
 Mhonda, Nguru Mts., Morogoro, 1,804 feet. 6° 8' S., 37° 35' E.

- Migeregere, Kilwa, 200 feet. 8° 49' S., 39° 13' E.
 Mihama, Shinyanga, 3,500 feet. 3° 56' S., 33° 58' E.
 Mikindani, Mikindani, sea-level. 10° 17' S., 40° 8' E.
 Mikwesi, Manyoni, 4,300 feet. 5° 37' S., 34° 50' E.
 Milo, Njombe, 4,000 feet. 9° 53' S., 34° 38' E.
 Minziro Forest, Bukoba, 3,900 feet. 1° 3' S., 31° 32' E.
 Misalai, Usambara Mts., Lushoto, 3,000 feet. 4° 54' S., 38° 27' E.
 Misenyi, Bukoba, 3,500 to 4,500 feet. 1° 5' S., 31° 15' E.
 Misinko, Singida, 4,900 feet. 4° 45' S., 34° 40' E.
 Mitonono, Lindi, 700 feet. 9° 52' S., 38° 53' E.
 Mitwero, Lindi, 50 feet. 9° 50' S., 39° 44' E.
 Miyombo, Kilosa, 1,800 feet. 6° 55' S., 36° 58' E.
 Mizizikaunga, Chunya, 2,620 feet. 8° 22' S., 32° 52' E.
 Mkalama, Singida, 3,660 feet. 4° 10' S., 34° 40' E.
 Mkalinzi, Buha, 5,600 feet. 4° 36' S., 29° 43' E.
 Mkangazi. *See See* Lukangazi.
 Mkarazi, Uluguru Mts., Morogoro, 1,000 to 2,000 feet. 6° 57' S., 37° 46' E.
 Mkata, Handeni, 900 feet. 5° 46' S., 38° 18' E.
 Mkata River, Kilosa and Morogoro, 3,000 to 1,500 feet. From 7° 20' S., 37° 0' E., to 6° 40' S., 37° 20' E.
 Mkgwa. *See* Kigwa.
 Mkindo River, Morogoro, 1,650 feet. 6° 45' S., 37° 40' E.
 Mkokono, Kilwa, 1,000 feet. 9° 15' S., 38° 35' E.
 Mkomazi, Lushoto, 1,500 feet. 4° 38' S., 38° 4' E.
 Mkulumuzi Caves, Tanga, 100 feet. 5° 5' S., 39° 3' E.
 Mkulumuzi River, Tanga, 2,500 feet to sea-level. From 5° 7' S., 38° 44' E. to 5° 5' S., 39° 5' E.
 Mkwihhi Forest, Liwale, 1,800 to 2,500 feet. 9° 5' S., 38° 5' E.
 Mlali, Mpwapwa, 4,000 to 4,400 feet. 6° 17' S., 36° 45' E.
 Milando. *See* Mando.
 Mlewa's. *See* Ruruma.
 Mlowa River, Mbeya, 6,600 to 3,200 feet. From 9° 15' to 8° 45' S., 33° 5' E.
 Mnenya, Kondoa, 4,000 feet. 4° 42' S., 35° 52' E.
 Moembe. *See* Mwembe.
 Mohoro, Rufiji, 200 feet. 8° 8' S., 39° 10' E.
 Momba (lower Saisi) River, Ufipa and Mbeya, 3,800 to 2,602 feet. From 8° 43' S., 32° 23' E. to 8° 10' S., 32° 28' E.
 Mombo, Lushoto, 1,355 feet. 4° 53' S., 38° 17' E.
 Momela Lake, Arusha, 5,000 feet. 3° 13' S., 36° 52' E.
 Monda, *See* Mhonda.
 Mondo, Kwimba, 3,900 feet. 2° 51' S., 33° 15' E.
 Monga, Usambara Mts., Tanga, 3,400 feet. 5° 5' S., 38° 37' E.
 Morogoro, Morogoro, 1,700 feet. 6° 48' S., 37° 40' E.
 Moru, Maswa, 5,200 feet. 2° 40' S., 34° 50' E.
 Moyowosi Mbuga, Buha and Kahama, 3,400 to 4,000 feet. 3° 25' to 4° 40' S., 31° 20' E.
 Mpanga, Rufiji, 450 feet. 7° 48' S., 38° 2' E.
 Mpanira, Mpwapwa, 4,000 feet. 6° 48' S., 36° 26' E.
 Mpimbwe, Mpanda, 2,800 to 4,000 feet. 7° 15' S., 31° 20' E.
 Mpitimbi, Songea, 3,500 feet. 10° 49' S., 35° 32' E.
 Mpombo River, Ufipa, 4,900 feet. 7° 23' S., 31° 10' E.
 Mpui, Ufipa, 5,700 feet. 8° 22' S., 31° 50' E.
 Mpwapwa, Mpwapwa, 3,315 feet. 6° 22' S., 36° 30' E.
 Mrijo, Kondoa, 5,100 feet. 5° 9' S., 36° 17' E.
 Msangawale's, Mbeya, 3,800 feet. 8° 43' S., 32° 46' E.
 Msangwa, Njombe. Not located.
 Msima River, Mpanda, 5,000 to 3,400 feet. From 6° 45' S., 31° 45' E. to 5° 48' S., 31° 25' E.
 Msimba. *See* Masimba.
 Msingi, Singida, 4,200 feet. 4° 19' S., 34° 34' E.
 Msogaa, Singida, 3,900 feet. 5° 4' S., 35° 4' E.
 Msomvia. *See* Usevia.
 Mswaki, Handeni, 2,700 feet. 5° 28' S., 37° 46' E.
 Mtagata, Bukoba, 4,900 feet. 1° 14' S., 30° 51' E.
 Mtali's. *See* Nshinshi.
 Mtambo River, Mpanda, 5,000 to 3,400 feet. From 6° 25' E., 31° 30' S. to 5° 45' S., 31° 5' E.
 Mtapaya, Lindi, 600 feet. 9° 39' S., 39° 18' E.
 Mtisi River, Mpanda, 4,000 to 3,400 feet. 6° 35' S., 31° 10' E.
 Mtoni, Mtoni-Fahre. *See* Kingoni Ferry.
 Mto wa Mbu, Masai, 3,300 feet. 3° 22' S., 35° 50' E.
 Mtumba, Ufipa, 6,000 feet. Not located.
 Mtyangimbori, Songea, 3,000 feet. 10° 17' S., 35° 30' E.
 Muale R. = Mhwala R. *See* Nyahua River.
 Mufindi, Uzungwa Mts., Iringa, 6,300 feet. 8° 36' S., 35° 13' E.
 Mugombia. Not located.
 Muhala, Manyoni, 3,500 feet. 5° 48' S., 34° 52' E.
 Mukalizi, Mbeya, 5,200 feet. 9° 3' S., 32° 3' E.
 Mungaa, Singida, 5,200 feet. 4° 54' S., 34° 52' E.

- Murembwi R., Liwale, 2,500 to 1,500 feet. From 9° 55' S., 37° 35' E. to 9° 12' S., 37° 50' E.
- Musoma, Musoma, 3,730 feet. 1° 30' S., 33° 47' E.
- Mutjek, Mbulu, 4,450 to 6,500 feet. 3° 25' S., 35° 40' E.
- Muyuni, Zanzibar Island, sea-level. 6° 22' S., 39° 27' E.
- Mwagala, Maswa, 4,000 feet. 3° 20' S., 33° 55' E.
- Mwakete, Livingstone Mts., Njombe, 6,730 feet. 9° 21' S., 34° 15' E.
- Mwamalasa, Shinyanga, 3,500 feet. 3° 54' S., 34° 17' E.
- Mwambasha, Shinyanga, 4,000 feet. 3° 33' S., 33° 10' E.
- Mwanasomano's = Lusomano's. See Maweie.
- Mwantini Hills, Shinyanga, 3,800 to 4,300 feet. 3° 38' S., 33° 20' E.
- Mwanza, Mwanza, 3,720 feet. 2° 31' S., 32° 54' E.
- Mwarawira's, Rungwe, Not located.
- Mwaya, Rungwe, 1,570 feet. 9° 34' S., 33° 57' E.
- Mwembe, Pare, 3,300 feet. 4° 10' S., 37° 50' E.
- Mwimbi, Ufipa, 5,800 feet. 8° 43' S., 31° 38' E.
- Mzukune River, Pare, 2,800 feet. 3° 59' S., 37° 48' E.
- Naabi Hill, Masai, 5,500 feet. 2° 48' S., 35° 2' E.
- Naberera, Masai, 4,820 feet. 4° 13' S., 36° 55' E.
- Nachisenga Mbuga, Mbeya, 4,800 feet. 9° 6' S., 32° 14' E.
- Nahungo, Kilwa, 600 feet. 9° 46' S., 38° 58' E.
- Nai. See Nayu.
- Nakachese, Mbeya, 2,620 feet. 8° 25' S., 32° 37' E.
- Namanyere, Ufipa, 5,000 feet. 7° 32' S., 31° 3' E.
- Nandanga Hill, Liwale, 1,000 feet. 9° 58' S., 38° 29' E.
- Nanga, Nzega, 4,000 feet. 4° 17' S., 33° 35' E.
- Nangu, Liwale, 1,000 feet. 8° 30' S., 38° 20' E.
- Nanyamba, Mikindani, 850 feet. 10° 42' S., 39° 51' E.
- Nasa, Mwanza, 3,900 feet. 2° 24' S., 33° 33' E.
- Nata, Musoma, 4,000 feet. 2° 1' S., 34° 24' E.
- Natron Lake, Masai, 2,001 feet. 2° 15' S., 36° 0' E.
- Nayu, Dodoma, 4,900 feet. 5° 48' S., 36° 5' E.
- Nchingidi, Lindi, 2,000 feet. 10° 0' S., 39° 13' E.
- Ndaburo, Manyoni, 3,900 feet. 6° 13' S., 34° 49' E.
- Ndala, Nzega, 4,100 feet. 4° 46' S., 33° 16' E.
- Ndalambo, Mbeya, 5,000 feet. 9° 2' S., 32° 28' E.
- Ndandya, Kondoa, 5,000 to 6,000 feet. 4° 43' S., 36° 19' E.
- Ndareda, Mbulu, 5,200 feet. 4° 13' S., 35° 33' E.
- Ndarema, Usambara Mts., Tanga, 1,500 to 3,500 feet. 5° 3' S., 38° 38' E.
- Ndilangilo. See Dilangilo.
- Ndogowe, Singida, 4,500 feet. 5° 28' S., 34° 42' E.
- Nduguyu River, Maswa, 5,000 to 3,400 feet. 3° 55' S., 34° 30' E.
- Ndundu, Rufiji, 300 feet. 7° 55' S., 38° 55' E.
- Ngarambi River, Liwale, 500 feet. 8° 27' S., 38° 38' E.
- Ngaserai, Masai, 3,300 feet. 2° 52' S., 36° 52' E.
- Ngaya, Kahama, 4,000 feet. 3° 37' S., 32° 38' E.
- Ngayaki, Masai, ca 4,900 feet. 5° 45' S., 36° 55' E.
- Ngerengere River, Morogoro and Uzaramo, 6,500 to 300 feet. From 7° 2' S., 37° 32' E. to 7° 3' S., 38° 34' E.
- Ngomba Stream, Chunya, 3,800 to 2,602 feet. 8° 24' S., 32° 54' E.
- Ngorongoro, Masai, 5,650 to 7,600 feet. 3° 10' S., 35° 35' E.
- Ngozi Crater, Poroto Mts., Rungwe, 7,170 feet. 9° 2' S., 33° 35' E.
- Ngulu, Pare, 2,900 feet. 3° 48' S., 37° 41' E.
- Niamansi River, Kigoma and Mpanda, 5,000 to 3,300 feet. 5° 50' S., 31° 0' E.
- Njila, Chunya, 2,620 feet. 8° 18' S., 32° 46' E.
- Njoge (Ijogi, Lenjogi), Masai and Mpwapwa, 5,000 feet. 5° 56' S., 36° 41' E.
- Njombe, Njombe, 6,000 feet. 9° 20' S., 34° 46' E.
- Nkuka Forest, Rungwe Mt., Rungwe, 5,460 feet. 9° 8' S., 33° 38' E.
- Nondwa, Dodoma, 2,500 to 3,000 feet. 6° 25' S., 35° 20' E.
- Nou Forest, Mbulu, 7,200 to 7,900 feet. 4° 5' S., 35° 30' E.
- Nshinshi, Singida, 4,200 feet. 4° 22' S., 34° 36' E.
- Ntainene, Mbeya, 5,000 feet. 9° 16' S., 32° 46' E.
- Ntakasangwa, Ufipa, 2,620 feet. 7° 48' S., 31° 52' E.
- Ntumba, Ufipa, 2,900 feet. 8° 22' S., 32° 7' E.
- Nrumbi, Chunya, 4,300 feet. 8° 23' S., 33° 20' E.
- Ntungi, Chunya, 2,620 feet. 8° 30' S., 32° 48' E.
- Nunghu, Maswa, 4,400 feet. 3° 8' S., 33° 47' E.
- Nyahonga River, Chunya, 5,200 to 4,300 feet. 8° 18' S., 33° 30' E.
- Nyahua River, Tabora, 4,100 to 3,800 feet. From 5° 52' S., 33° 21' E. to 4° 57' S., 33° 55' E.
- Nyakahanga, Bukoba, 5,000 feet. 1° 37' S., 31° 8' E.
- Nyakakiri, Biharamulo, 4,800 feet. 2° 17' S., 31° 27' E.
- Nyama River, Njombe and Ulanga, 4,500 to 900 feet. 9° 12' S., 35° 30' E.

- Nyambiti, Kwimba, 4,000 feet. 2° 50' S., 33° 25' E.
 Nyamirembe, Biharamulo, 3,720 feet. 2° 32' S., 31° 47' E.
 Nyamwanga, Poroto Mts., Rungwe, 6,400 feet. 9° 4' S., 33° 40' E.
 Nyangesi. *See* Nyegezi.
 Nyange, Uluguru Mts., Morogoro, 2,000 to 4,000 feet. 6° 51' S., 37° 46' E.
 Nyarambugu R., Biharamulo, 4,900 feet. 2° 43' S., 31° 20' E.
 Nyaruboro Range, Maswa, 4,800 to 5,800 feet. 2° 35' S., 34° 20' to 34° 45' E.
 Nyegezi, Mwanza, 3,720 feet. 2° 37' S., 32° 52' E.
 Nyingwa, Uluguru Mts., Morogoro, 7,800 feet. 7° 9' S., 37° 40' E.
 Nzinge, Dodoma, 3,500 feet. 6° 11' S., 35° 29' E.
 Ofwana, Singida, 3,800 feet. 4° 56' S., 34° 4' E.
 Ol Balbal, Masai, 4,500 feet. 3° 0' S., 35° 25' E.
 Ol Biribiri Hill, Masai, 6,500 feet. 1° 52' S., 35° 15' E.
 Oldeani Mt., Masai and Mbulu, 4,000 to 10,400 feet. 3° 17' S., 35° 26' E.
 Old Mbulu Reserve. *See* Kainam.
 Old Moshi, south slopes of Kilimanjaro, Moshi, 4,000 feet. 3° 18' S., 37° 25' E.
 Ol Doinyo Lengai, Masai, 3,000 to 9,443 feet. 2° 46' S., 35° 55' E.
 Old Shinyanga, Shinyanga, 3,900 feet. 3° 33' S., 33° 25' E.
 Olduwai, Masai, 5,000 feet. 3° 0' S., 35° 20' E.
 Orangi River, Musoma, 4,500 to 3,900 feet. 2° 15' S., 34° 50' E.
 Ormasse River, Musoma, 5,300 to 4,700 feet. 1° 37' S., 34° 55' E.
 Otto Estate, Kilosa, 1,800 feet. 6° 53' S., 36° 57' E.
 Pagwi, Masai, ca 4,800 feet. 5° 40' S., 37° 0' E.
 Pangani, Pangani, sea-level. 5° 26' S., 38° 58' E.
 Pangani Forest, Zanzibar Island, below 100 feet. 6° 20' S., 39° 30' E.
 Pangani River. *See* Ruvu River.
 Pare Mts., Pare, 2,500 to 8,000 feet. 3° 30' to 4° 35' S., 37° 50' E.
 Patamera, Chunya, 4,000 feet. 8° 21' S., 33° 3' E.
 Pawaga, Iringa, 2,500 to 3,000 feet. 7° 15' S., 35° 30' E.
 Pemba Island, Indian Ocean, below 300 feet. 4° 50' to 5° 30' S., 39° 45' E.
 Peramiho, Songea, 3,700 feet. 10° 38' S., 35° 27' E.
 Perani, Tanga, 400 feet. 4° 36' S., 39° 2' E.
 Peters's Hut, Kilimanjaro, Moshi, 11,600 feet. 3° 12' S., 37° 25' E.
 Phillipshof. *See* Magamba.
 Pongwe, Bagamoyo, 1,200 feet. 6° 22' S., 38° 15' E.
 Poroto Mts., Mbeya and Rungwe, 4,000 to 8,600 feet. 9° 0' S., 33° 25' to 34° 5' E.
 Puma, Singida, 5,100 feet. 4° 59' S., 34° 44' E.
 Pwaga, Mpwapwa, 3,000 feet. 6° 41' S., 36° 38' E.
 Rombashi River. *See* Mbasi Creek.
 Rombo, south east slopes of Kilimanjaro, 3,500 to 6,000 feet. 3° 14' S., 37° 38' E.
 Rovuma River, Songea, Tunduru, Masasi, Newala and Mikindani, 5,000 feet to sea-level. From 10° 45' S., 33° 40' E. to 10° 29' S., 40° 27' E.
 Ruaha River, Mbeya, Iringa and Ulanga, 9,700 to 400 feet. From 9° 10' S., 34° 5' E. to 7° 56' S., 37° 52' E.
 Ruandalo, Karagwe, Bukoba. Not located.
 Ruchugi Post. *See* Uvinza.
 Ruchugi River, Buha and Kigoma, 4,100 to 3,200 feet. 4° 23' to 4° 55' S., 30° 20' E.
 Rudewa, Kilosa, 1,800 feet. 6° 42' S., 37° 7' E.
 Rufiji River, Liwale, Ulanga and Rufiji, 650 feet to sea-level. From 8° 31' S., 37° 22' E. to 8° 0' S., 39° 25' E.
 Ruhu River, Liwale, 2,500 to 1,000 feet. From 10° 10' S., 37° 35' E. to 10° 18' S., 38° 7' E.
 Ruhuvu River. *See* Ruhu River.
 Ruiga R., Biharamulo and Bukoba, 4,800 to 3,717 feet. 2° 20' S., 31° 35' E.
 Ruira. *See* Luhira.
 Rukwa Lake, Chunya, Mbeya and Ufipa, 2,602 feet. 7° 35' to 8° 32' S., 31° 48' to 32° 52' E.
 Rumuli, Iringa, 6,000 feet. 8° 7' S., 35° 25' E.
 Rungwa, Manyoni, 4,000 feet. 6° 57' S., 33° 32' E.
 Rungwe Mt., Rungwe, 4,500 to 9,700 feet. 9° 8' S., 33° 40' E.
 Ruu, Lindi, 400 feet. 10° 13' S., 39° 36' E.
 Ruruma, Singida, 4,500 feet. 4° 25' S., 34° 32' E.
 Rusubi, Biharamulo, 4,800 feet. 2° 40' S., 31° 20' E.
 Rutengani, Rungwe, 4,000 feet. 9° 19' S., 33° 37' E.
 Ruvu (Pangani) River, Parc, Masai, Lushoto and Pangani 2,298 feet to sea-level. From 3° 35' S., 37° 45' E. to 5° 26' S., 38° 58' E.
 Ruwanga Plains, Musoma, 3,720 to 4,400 feet. 2° 8' S., 34° 0' E.
 Sadani, Bagamoyo, sea-level. 6° 3' S., 38° 43' E.
 Sadiman Hill, Masai, 9,500 feet. 3° 10' S., 35° 28' E.
 Sagala, Mpwapwa, 4,300 feet. 6° 14' S., 36° 32' E.
 Sagayo. *See* Zagayu.
 Saisi River, Ufipa, 6,000 to 3,800 feet. From 9° 10' S., 31° 35' E. to 8° 43' S., 32° 23' E.
 Sala, Mpanda, 3,000 feet. 7° 33' S., 31° 58' E.
 Sambala, Kondo, 4,700 feet. 4° 48' S., 35° 35' E.
 Same, Parc, 2,800 feet. 4° 4' S., 37° 43' E.
 Samuye, Shinyanga, 3,800 feet. 3° 48' S., 33° 20' E.
 Sandawe, Kondo, 2,800 to 4,800 feet. 5° 15' S., 35° 20' E.
 Sanga, Maswa, 4,100 feet. 3° 23' S., 34° 12' E.
 Sanjan Plains, Masai, 3,800 feet. 2° 35' S., 35° 40' E.

- Sanje, Ulunga, 1,000 feet. 7° 45' S., 36° 57' E.
 Sanya Plains, Masai, 2,800 to 3,500 feet.
 3° 25' S., 37° 5' E.
 Saranda, Manyoni, 3,500 feet. 5° 43' S.,
 34° 59' E.
 Scholler's Farm. *See* Upale Plantation.
 Sekenke, Singida, 3,900 feet. 4° 15' S.,
 34° 11' E.
 Selous's Game Reserve, Liwale and Rufiji,
 600 to 2,500 feet. 7° 40' to 10° 20' S.,
 37° to 38° 20' E.
 Sere Mbuga, Handeni-Masai border, 3,900
 feet. 5° 23' S., 37° 27' E.
 Serengeti Plains, Masai and Musoma, 4,000
 to 6,000 feet. 2° 25' to 3° 5' S., 34° 40'
 to 35° 20' E.
 Seronera River, Musoma, 5,000 to 4,400 feet.
 2° 25' S., 34° 50' E.
 Serya Lake, Kondoa, 4,100 feet. 4° 56' S.,
 35° 41' E.
 Shambarai, Masai, 3,000 feet. 3° 43' S.,
 36° 52' E.
 Shanwa, Maswa, 4,400 feet. 3° 10' S., 33°
 46' E.
 Shimililo, Tunduru, 1,500 feet. 11° 25' S.,
 37° 15' E.
 Shinyanga. *See* Old Shinyanga.
 Shoga, Chunya, 4,800 feet. 8° 26' S.,
 33° 39' E.
 Shonu, Maswa, 4,200 feet. 3° 15' S.,
 34° 20' E.
 Shume Forest, Usambara Mts., Lushoto,
 5,500 to 7,570 feet. 4° 40' S., 38° 15' E.
 Sibiti River, Maswa and Singida, 3,600 to
 3,380 feet. 3° 55' S., 34° 35' E.
 Siga Caves. *See* Mkulumuzi Caves.
 Sigi River, Tanga, 3,300 feet to sea-level.
 From 5° 4' S., 38° 35' E. to 5° 3' S., 39° 4' E.
 Sigilari. *See* Kingori Juu.
 Simbamweni. *See* Kingolwira.
 Simbini, Uluguru Mts., Morogoro, 2,000 to
 3,000 feet. 7° 1' S., 37° 40' E.
 Simbo, Nzega, 3,900 feet. 4° 40' S., 33° 27' E.
 Simbo River, Mpwapwa. *See* Matomondo
 River.
 Simiyu River, Maswa, 5,600 to 3,717 feet.
 From 3° 10' S., 34° 55' E. to 2° 33' S.,
 33° 26' E.
 Sindi (lower Ugala) River, Kigoma, 3,250 to
 3,100 feet. From 5° 45' S., 31° 11' E.
 to 5° 8' S., 30° 41' E.
 Singida, Singida, 5,070 feet. 4° 49' S., 34° 44' E.
 Sinya, Masai, 3,850 feet. 2° 45' S., 37° 1' E.
 Sira River, Chunya, 8,000 to 2,700 feet.
 From 8° 50' S., 33° 33' E. to 8° 30' S., 33°
 33' E.
 Somagedi, Shinyanga, 3,600 feet. 3° 51' S.,
 34° 12' E.
 Songea, Songea, 3,840 feet. 10° 42' S., 35° 38'
 E.
 Songwe River (Nyasa), Mbeya and Rungwe,
 6,700 to 1,568 feet. From 9° 7' S., 33° 12' E.
 to 9° 43' S., 33° 57' E.
 Songwe River (Rukwa), Mbeya and Chunya,
 7,000 to 2,602 feet. From 9° 10' S.,
 33° 27' E. to 8° 27' S., 32° 53' E.
 Speke Gulf, Lake Victoria, Musoma, Mwanza
 and Kwimba, 3,717 feet. 2° 20' S., 33° 30' E.
 Sumbawanga, Ufipa, 5,800 feet. 7° 57' S.,
 31° 36' E.
 Suna, Singida, 4,500 feet. 5° 23' S., 34° 46' E.
 Sunga, Usambara Mts., Lushoto, 5,800 feet.
 4° 32' S., 38° 14' E.
 Sungwizi, Nzega, 4,100 feet. 4° 30' S., 33°
 30' E.
 Tabora, Tabora, 4,000 feet. 5° 2' S., 32°
 48' E.
 Tandala, Livingstone Mts., Njombe, 5,000
 feet. 9° 23' S., 34° 14' E.
 Tanga, Tanga, sea-level. 5° 4' S., 39° 6' E.
 Tarangire, Mbulu, 3,700 feet. 3° 50' S.,
 36° 0' E.
 Tashmata Bridge, Ruaha River, Iringa.
 Not located.
 Tawa, Morogoro, 1,000 feet. 7° 0' S., 37°
 48' E.
 Tendaguru, Lindi, 1,100 feet. 9° 40' S.,
 39° 20' E.
 Tendigo, Kilosa, 1,410 feet. 6° 55' S., 37° 20' E.
 Tinde, Shinyanga, 4,000 feet. 3° 52' S.,
 33° 12' E.
 Tisso, Tisso kwa Meda. *See* Itiso.
 Tubugwe, Mpwapwa, 3,900 feet. 6° 21' S.,
 36° 37' E.
 Tukuyu, Rungwe, 5,000 feet. 9° 16' S., 33°
 38' E.
 Tumbatu Islet, near Zanzibar Island, below
 100 feet. 5° 48' S., 39° 12' E.
 Tunduma, Mbeya, 5,400 feet. 9° 18' S., 32°
 46' E.
 Tununguo, Morogoro, 500 feet. 7° 2' S.,
 37° 59' E.
 Ubende, Mpanda, 2,540 to 8,200 feet. 6° to
 6° 50' S., 30° to 31° E.
 Udoo, Bagamoyo, 500 to 1,000 feet. 6° 20' S.,
 38° 35' E.
 Ufiome Mt., Mbulu, 5,000 to 7,900 feet.
 4° 14' S., 35° 48' E.
 Ugala River, Tabora, Mpanda, and Kigoma,
 3,600 to 3,300 feet. From 6° 12' S., 32° 20' E.
 to 5° 35' S., 31° 10' E.
 Ugogo, Manyoni, Dodoma and Mpwapwa,
 2,500 to 6,400 feet. 5° 30' to 7° 5' S., 34° 40'
 to 36° 30' E.
 Ugunda, Tabora, 3,450 to 4,100 feet. 5°
 35' to 6° 10' S., 32° 5' to 32° 45' E.
 Uhehe, Iringa, 2,500 to 6,500 feet. 7° 5' to
 9° S., 35° to 36° E.
 Ujiji, Kigoma, 2,540 feet. 4° 55' S., 29° 40' E.
 Ukami, Morogoro, 250 to 2,000 feet. 6° 30',
 to 7° 20' S., 37° 50' to 38° 30' E.
 Ukara Island, Lake Victoria, Mwanza, 3,750
 feet. 1° 51' S., 33° 3' E.
 Ukerewe Island, Lake Victoria, Mwanza,
 3,717 to 4,213 feet. 2° S., 33° E.
 Ukia, Ufipa, 2,620 feet. 7° 45' S., 31° 50' E.
 Ukine. *See* Bukine.
 Ukune, Kahama, 3,800 to 4,400 feet.
 3° 55' S., 32° 20' E.
 Ukutu, Morogoro, 400 to 1,500 feet.
 7° 15' to 7° 50' S., 37° 20' to 38° 25' E.
 Ukwere, Bagamoyo, 400 to 1,100 feet. 6°
 34' S., 38° 20' E.
 Ulunga Valley, Ulunga, 650 to 1,000 feet.
 From 9° S., 36° E. to 8° 31' S., 37° 22' E.

- Ulaya, Kilosa, 1,900 feet. 7° 5' S., 36° 55' E.
 Ulete, Iringa, 5,800 feet. 8° 7' S., 35° 26' E.
 Uliambiri Island. *See* Bumbiri Island.
 Uliampiti, Singida, 4,500 feet. 5° 12' S., 34° 47' E.
 Uluguru Mts., Morogoro, 2,000 to 8,697 feet. 6° 49' to 7° 16' S., 37° 40' E.
 Umba River, Lushoto and Tanga, 7,000 feet. to sea-level. From 4° 32' S., 38° 16' E. to 4° 39' S., 39° 13' E.
 Umba Steppe, Lushoto, 500 to 1,500 feet. 4° 15' to 4° 45' S., 38° 20' to 39° E.
 Umbugwe, Mbulu, 3,150 to 3,800 feet. 3° 45' to 4° S., 35° 40' to 35° 50' E.
 Unyamwezi, Tabora and Nzega, 3,250 to 5,000 feet. 4° to 6° 20' S., 32° to 33° 40' E.
 Unyang'anyi, Singida, 4,000 to 5,000 feet. 4° 50' S., 35° E.
 Upale Plantation, Tanga, 600 feet. 5° 6' S., 38° 51' E.
 Upangwa, Njombe, 1,570 to 8,200 feet. 9° 40' to 10° 20' S., 34° 20' to 35° 20' E.
 Urowi, Mbeya, 4,000 feet. 8° 5' S., 34° 10' E.
 Urugu, Singida, 3,800 feet. 4° 38' S., 34° 12' E.
 Usa, Arusha, 3,500 feet. 3° 22' S., 36° 53' E.
 Usagara, Kilosa, 1,500 to 7,000 feet. 6° 40' to 8° S., 36° to 37° 20' E.
 Usambara Mts., Lushoto, 2,000 to 7,500 feet. 4° 24' to 5° 16' S., 38° 10' to 38° 48' E.
 Usambiro, Mwanza, 4,000 feet. 3° 0' S., 32° 34' E.
 Usandawi. *See* Sandawe.
 Usangire North, Songea, 3,248 feet. 10° 2' S., 35° 23' E.
 Usegua. *See* Uzigua.
 Useri, east slopes of Kilimanjaro, Moshi, 3,000 to 7,000 feet. 3° 6' S., 37° 37' E.
 Usevia, Mpanda, 3,100 feet. 7° 6' S., 31° 14' E.
 Ushirombo, Kahama, 3,900 feet. 3° 29' S., 31° 58' E.
 Ushora, Singida, 4,000 feet. 4° 40' S., 34° 16' E.
 Usongo, Nzega, 4,100 feet. 4° 10' S., 35° 25' E.
 Ushuhilo, Manyoni, 4,900 feet. 6° 24' S., 33° 55' E.
 Usure, Singida, 4,300 feet. 4° 40' S., 34° 23' E.
 Utengule, Ulanga, 1,000 feet. 8° 43' S., 35° 46' E.
 Urete, Rufiji, 400 feet. 8° 1' S., 38° 45' E.
 Uvinza, Kigoma, 3,200 feet. 5° 7' S., 30° 22' E.
 Uyui, Tabora, 4,000 feet. 4° 54' S., 32° 50' E.
 Uzaramo, Uzaramo, 1,100 feet to sea-level. 6° 30' to 7° 30' S., 38° 0' to 39° 40' E.
 Uzigua, Handeni and Pangani, sea-level to 3,000 feet. 5° 10' to 5° 40' S., 37° 40' to 38° 50' E.
 Uzungwa Mts., Iringa, 5,000 to 7,000 feet. 7° 45' to 8° 35' S., 35° 45' to 36° 12' E.
 Vihingo, Uzaramo, 450 feet. 6° 45' S., 38° 47' E.
 Vikindu, Uzaramo, 360 feet. 6° 58' S., 39° 17' E.
 Vitongoji, Pemba Island, sea-level. 5° 13' S., 39° 49' E.
 Vituri, Uluguru Mts, Morogoro, 2,000 to 6,500 feet. 6° 51' S., 37° 44' E.
 Wahumba, Manyoni, 3,000 feet. 5° 55' S., 35° 5' E.
 Wala River, Tabora, 4,100 to 3,450 feet. From 5° 0' S., 33° 15' E. to 5° 47' S., 32° 3' E.
 Wami River, Kilosa, Morogoro and Bagamoyo, 6,000 feet to sea-level. From 6° 30' S., 36° 55' E. to 6° 5' S., 38° 46' E.
 Wandawewe Hills, Ulanga, 2,000 to 3,000 feet. 9° 20' S., 36° 35' E.
 Wasi, Kondo, 4,500 to 5,900 feet. 4° 26' to 4° 44' S., 35° 42' to 36° 0' E.
 Wembere Plain, Nzega, Singida and Shinyanga, 3,380 to 4,000 feet. 3° 45' to 5° 10' S., 33° 40' to 34° 45' E.
 Weruweru River, south slopes of Kilimanjaro, Moshi, 16,000 to 2,500 feet. From 3° 8' S., 37° 17' E. to 3° 25' S., 38° 17' E.
 Weti, Pemba Island, sea-level. 5° 4' S., 39° 43' E.
 Wilhelmstal. *See* Lushoto.
 Wualaba River. *See* Ugala River.
 Yaida Depression, Mbulu, 4,265 feet. 3° 55' S., 35° 5' E.
 Zagayu, Maswa, 4,400 feet. 2° 57' S., 33° 46' E.
 Zanzibar Island, below 300 feet. 5° 43' to 6° 28' S., 39° 11' to 39° 41' E.
 Zimba, Ufipa, 3,200 feet. 7° 52' S., 31° 48' E.
 Zinga, Kilwa, 900 feet. 9° 11' S., 38° 43' E.
 Zoisa, Mpwapwa, 4,700 feet. 5° 45' S., 36° 32' E.
 Zombe, Rufiji, 400 feet. 7° 49' S., 38° 18' E.
 Zongve Hill, Chunya, 4,500 to 5,096 feet. 8° 27' S., 33° 28' E.

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A COLLECTION OF AQUATIC HEMIPTERA FROM KENYA

By E. S. BROWN, B.A., F.R.E.S.

During a recent visit to Kenya, Prof. G. D. Hale Carpenter made a collection of aquatic Hemiptera, which he has kindly handed over to me for examination; I am grateful to him for the opportunity of examining and placing on record the contents.

The collection (except the specimens from stations D and E) was made in the Kitale District, Trans-Nzoia, during January and February, 1949. It comprises 176 specimens, belonging to 18 species in the families Notonectidae, Pleidae, Belostomatidae, Corixidae and Naucoridae. Some Nepidae were observed, but not collected. All species represented are previously described, although some are not too well known.

List of collecting stations

For the following details of the six habitats from which samples were taken I am indebted to Prof. Carpenter. On the whole they seem to represent a good range of habitat-types.

- (A) Reservoir, Kapretwa Estate, c. 6,700 ft. A deep piece of water, with a shallower margin away from the dam. Vegetation included water-lilies and a species of *Potamogeton* or allied plant. A fully exposed body of water, unshaded by trees.
- (B) Stream feeding the reservoir described above. It enters through a narrow strip of "gallery forest" and runs (or trickles according to season) quite swiftly, with small pools somewhat choked with weed. Shaded by trees.
- (C) Another reservoir similar to A, formed by damming a small forest stream, c. 6,300 ft. Choked with *Azolla*.
- (D) Turkwell River, running from heights of Mt. Elgon to the hot plains below. In rainy season a large river, but reduced at the time of the collection to residual, very stagnant, pools under the banks and a small trickling stream in a sandy bed. The collection was made in the pools at about 4,400 ft. These pools were very opaque and swarming with beetles and bugs.
- (E) Rock pool on escarpment, Suk. Pool fed by a tiny stream among rocks, c. 5,500 ft. Some of the Hemiptera were in weed in the pool itself, others at the overflow which was in the form of a small weed-choked stream.
- (F) Mountain stream, Kaboyon, c. 6,500 ft. A tributary of the Nzoia; torrential stream flowing from Mt. Elgon, with trout in its upper cooler parts. Hemiptera collected in residual pools which were scattered here and there, shaded by gallery forest.

List of species.

NOTONECTIDÆ.

Anisops pellucens Gerst., f. *splendida* Hutch.

A, 2♂♂, 1♀.

A. amaryllis Hutch.

B, 1 ♂, 1♀; C, 5♂♂, 2♀♀; F, 2♂♂, 1♀.

There is considerable variation in colour in these specimens. The darker ones are typical; from B and C there are paler specimens, showing some resemblance to *A. eros* Hutch.

A. varia scutellata Fieb.

E, 1♂.

A. jaczewskii Hutch.

D, 1♂, 15♀♀.

A. psyche Hutch.

A, 1♂, 5♀♀.

A. hancocki Hutch.

D, 1♂, 2♀♀. These are somewhat darker than the type; the *dorsum abdominis* is black.

Enithares sobria Stal.

A, 5♂♂, 8♀♀; B, 2♀♀; C, 1♂; D, 4♂♂, 8♀♀, 2 nymphs.

E. V-flavum Reut.

A, 1♀; B, 1♂, 4♀♀, 5 nymphs; E, 6♀♀, 11 nymphs.

These specimens show great colour variation, some being dark and well marked, and others pale creamy grey, with intermediates between the extremes; those from B were all more or less pale, that from A very pale, while of the six samples from E, 5 were dark and 1 was pale. The genitalia of males were typical for this species.

PLEIDÆ

Plea pullula Stal.

A, 18.

P. piccanina Hutch.

A, 10.

According to the present systematic position of the genus *Plea*, these specimens are referable to the species shown above, the distinction being based almost entirely on size (Hutchinson 1929). This is obviously unsatisfactory, since there is a more or less continuous variation between the largest and smallest. The two extremes appear to be very different insects, and would certainly be regarded as separate species, but the intermediates cause one to wonder whether we have not here one very variable species. Dissection of male and female genitalia provided no distinguishing features, and their identity must rest as given until a thorough revision of the African species has been undertaken.

BELOSTOMATIDÆ.

Sphaerodema nepoides (Fabr.)

A, 1♀.

CORIXIDÆ.

Agroptocorixa dakarica Jacz.

A, 1♂.

Sigara (Tropocorixa) sjöstedti Kirk.

A, 3♂♂, 2♀♀; B, 1♀; F, 1♀.

S. (Tropocorixa) chinana (Hutch.).

D, 5♂♂, 10♀♀.

This species was described by Hutchinson (1928) from Kampala, Uganda, and there do not appear to be any later records. He had only a single male and female on which to base his description; the longer series of specimens recorded here agree very closely with his description, which it is possible to supplement with a few additional details as follows. The pronotum sometimes has 7 instead of 8 transverse pale lines; the third is very frequently divided in the middle, but not always; the last three show only a slight tendency to anastomose, and this only in some specimens. The strigil, in two specimens examined, has five rows of teeth instead of six as given by Hutchinson. The length of the specimens was as follows: ♂ 5.7-6.0 mm. (4 measured), ♀ 6.0-6.3 mm. (8 measured).

Hutchinson did not describe the male genital capsule and left clasper, and these are here figured (Fig.1) since they are of considerable taxonomic interest. The distal process of the capsule is complex, with an outgrowth arising before the tip asymmetrically to one side; in this it resembles *Sigara sjöstedti* (Kirk.) as figured by Lundblad (1928) except that the outgrowth is less well developed, less complex and less heavily chitinated than in that species; these species therefore both differ from most subgenera of *Sigara* in having a complex instead of a simple distal process to the genital capsule; the similarity does not end here, for the structure of the penis sheath is also somewhat similar,

but in this case it is *S. chinana* which shows the greater complexity, as can be seen by comparing Fig. 1 A with Lundblad's figure. It is, however, in the claspers that these species show the greatest affinity; the right clasper of *S. chinana* has been figured by Hutchinson, and both claspers of *S. sjöstedtii* by Lundblad (*loc. cit.*); the left clasper of *S. chinana* is here figured in three aspects, two of which are the same as those depicted by Lundblad for *S. sjöstedtii*; it will be seen from comparison of these figures that the resemblance between the two species is very close, and especially in the somewhat bizarre form of the right clasper; in this latter character, and in others as well, there is clearly affinity with the subgenus *Tropocorixa* Hutchinson (1940), and doubtless this is where *S. chinana* and *S. sjöstedtii* belong.

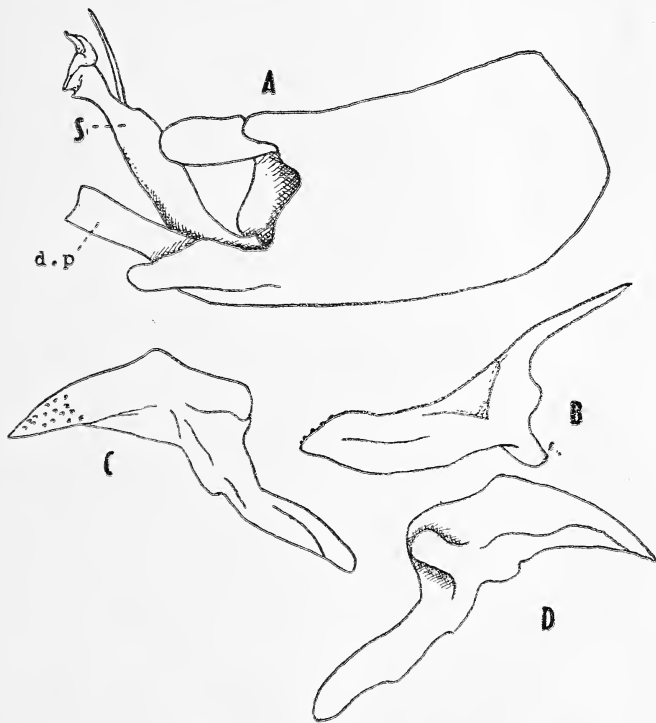


Fig. 1.—*Sigara* (*Tropocorixa*) *chinana* (Hutch.). A, genital capsule from side; d.p., distal process; s, penis sheath. B-D, different aspects of left clasper; B, from above; C, from left side; D, from right side.

NAUCORIDÆ.

Naucoris (subg. *Naucorisella*) *obscuratus kenyalis* Poiss.

B, 1♂, 1♀.

Laccocoris limigenus Stal.

D, 1♀, 2 nymphs.

Macrocoris flavicollis Sign.

A, 4♂♂, 7♀♀.

M. nigropunctatus nigropunctatus Mont.

A, 3♂♂, 6♀♀.

Notes on Geographical Distribution.

I have been unable to trace previous records from Kenya for seven of the species represented (*Anisops jaczewskii*, *A. hancocki*, *Enithares V-flavum*, *Sphaerodema nepoides*, *Sigara chinana*, *Laccocoris limigenus*, *Macrocoris nigropunctatus nigropunctatus*). One would expect, however, from their known distribution to find these species there.

If we exclude the species of *Plea*, of which the taxonomy is in an unsatisfactory state, the remainder may be grouped as follows:

- (i) Species with a wide African distribution: *Anisops varia scutellata*, *Enithares sobria* (not extending to extreme north).
- (ii) Species ranging across central Africa and extending to the north: *Sphaerodema nepoides* (north to Turkey, and occurring also in Madagascar).
- (iii) Species ranging across central Africa: *Agraptocorixa dakarica*, *Macrocoris nigropunctata nigropunctata* (this form is recorded hitherto apparently only from Nigeria).
- (iv) Species known only from East Africa: *Anisops amaryllis*, *A. hancocki* (Uganda), *Sigara sjöstedti*, *S. chinana* (Uganda), *Naucoris obscuratus kenyalis*.
- (v) Species ranging across central Africa and extending also towards the south: *Anisops pellucens*, *A. jaczewskii*, *A. psyche*, *Enithares V-flavum*, *Laccocoris limigenus*, *Macrocoris flavicollis*.

From this analysis it can be seen that the bulk of the collection consists of species with an East African, tending towards a southern distribution: these elements comprise slightly over two-thirds of the total.

Notes on Ecology

It is dangerous to base ecological conclusions on insufficient data, and therefore no attempt will be made to extract an unjustified amount of information from collections from only six bodies of water. These latter may be grouped into three types: (1) large bodies of water, still or nearly so (A, C); (2) small pools and streams (B, E); (3) residual pools formed by drying up of larger streams or rivers (D, F). The following deductions regarding the fauna of these types may perhaps be justified, but should be accepted with caution in view of the scanty data available.

- (1) *Large bodies of water.* In the Kapretwa Reservoir (A) *Enithares sobria*, *Plea* spp., *Sigara sjöstedti*, *Macrocoris flavicollis*, *M. nigropunctatus*, and possibly *Anisops psyche* are numerous enough to suggest that this is a favoured type of habitat; in the other reservoir (C) few bugs were taken but *Anisops amaryllis* was well represented.
- (2) *Small pools and streams.* *Enithares V-flavum* was numerous in both B and E, and in both it was evidently breeding since the nymphs found were almost certainly of this species; it is therefore probable that this is a running water species; this is supported by Hutchinson's statement (1929) that it occurs in the pools and slower running parts of streams. Its occurrence in small numbers in reservoir

A, and that of the lake species *Enithares sobria* and *Sigara sjöstedti*, also in small numbers, in habitats B and E is probably evidence of the similarity of these two types of ecofauna; this is what one would expect by analogy with European water-bugs, where there is considerable overlap between the faunas of lake and rivers.

- (3) *Residual pools.* The inhabitants of these are probably immigrants; in the dry season the pools left by the drying up of rivers serve as "traps" for migrating aquatic insects; this is supported by the absence of nymphs, and by the extraordinary sex-ratio for *Anisops jaczewskii* in D (1♂, 15♀♀); there is in some species of water-bugs a strong disparity in the sex-ratio of migrating individuals. One cannot therefore safely make ecological deductions from these pools, other than the fact that the species found therein (*Anisops jaczewskii*, *A. hanckoci*, *A. amaryllis*, *Enithares sobria*, *Sigara chinana*, *S. sjöstedti* and *Laccocoris limigenus*) are very probably migratory, and may therefore be expected to be found in a wide range of habitats.

Acknowledgements. I wish to extend my sincerest thanks to Prof. G. D. Hale Carpenter for the opportunity to examine this collection and also to Dr. R. Poisson who has helped me in the identification of some of the more difficult species.

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NEW SPECIES OF AFRICAN STAPHYLINIDÆ

Part II

by MALCOLM CAMERON, R.N., M.B., F.R.E.S.

1. **LEPTOLINUS FUSCIPENNIS** sp.n.

Moderately shining, red, the elytra blackish, the reflexed sides and posterior margin (narrowly and obscurely) reddish yellow, the abdomen often more or less extensively infuscate. Antennae red. Legs reddish yellow. Length 6 mm. Head much longer than broad (3.3:2.5), scarcely widened behind, the posterior angles briefly rounded, as broad as the thorax, along the middle with narrow shining line, elsewhere closely and rather coarsely punctured, the punctures here and there confluent. Antennae with 2nd and 3rd segments of equal length, 4th. to 10th. transverse, gradually increasing in width. Thorax longer than broad (4:2.5), rather broadly impunctate along the middle, elsewhere more finely and less closely punctured than the head and with very fine ground sculpture. Elytra a little shorter than the thorax (3.3:4), slightly longer than broad, with punctures very similar except at the sides where they are much finer. Abdomen very finely and rather closely punctured and with fine coriaceous ground sculpture.

KENYA COLONY, Naivasha: July, 1937 (H. J. A. Turner.) Type in B.M.

2. **LEPTACINUS LONGIPENNIS** sp.n.

Shining; head, thorax and abdomen black, elytra pitchy. Thorax with dorsal row of 12 punctures. Antennae reddish brown. Legs reddish yellow. Length 5.5 mm.

A narrow elongate species. Head a little longer than broad, scarcely widened behind, broader than the thorax, as broad as the base of elytra; median frontal sulci deep, rather long, parallel, the lateral narrower: front and vertex impunctate, elsewhere with moderate, not very close punctures; ground sculpture fine, more or less transverse. Antennae with the 2nd. and 3rd. segments of equal length, 4th. to 10th. transverse, differing but little. Thorax longer than broad, (3:2) narrowed towards base with dorsal row of twelve small close punctures, the sides with a series of seven or eight similar ones; ground sculpture as on head. Elytra as long as but broader than the thorax, longer than broad, (3:2.5) with humeral and sutural rows of small close punctures, between them with a few scattered ones; ground sculpture absent. Abdomen impunctate along middle, at the sides with small moderately close punctures; ground sculpture fine, transversely strigose.

KENYA COLONY, Kabete: 5,800 feet. December, 1938 Unique. Type in B.M.

3. **NUDOBIUS MERUENSIS** sp.n.

Moderately shining, entirely black: thorax with dorsal row of three punctures. Antennae pitchy. Legs dark, tarsi reddish yellow. Length 9.5 mm. Larger and more robust than *quadriceps* Cam. with shorter broader head and less numerous punctures, the thorax with dorsal row of only three punctures. Head very slightly longer than broad, quadrate, broader than the thorax and base of elytra, along the middle and before the base, impunctate, on the disc with elongate, here and there longitudinally confluent umbilicate punctures; ground sculpture fine, transverse wavy. Antennae with the penultimate segments about a half broader than long. Thorax longer than broad (6:4.5) the sides parallel, emarginate at the middle, with dorsal row of three punctures, the first just before the middle, the second and third remote from it and behind the middle, the sides with a row of four others; ground sculpture as on head. Elytra as long as thorax, slightly widened towards apex, a little longer than broad, with very obsolete sutural and humeral rows of punctures, laterally with smaller and closely placed punctures; ground sculpture absent. Abdomen impunctate along the middle, elsewhere with a few small scattered punctures, the ground sculpture fine and transverse.

KENYA COLONY, Meru July 1943 (V. G. Van Someren). Unique. Type in B.M.

4. NUDOBIUS MAGNUS sp.n.

Shining black, the elytra with slight blue reflex. Antennae with the 1st. segment reddish brown. Legs black, the posterior tarsi reddish yellow. Length 13.5 mm. Readily recognised by the large size. Differs from *morosus* Tott. in the larger size, the head widened behind and the ground sculpture. Head subtriangular, distinctly widened behind, very slightly broader than long, the posterior angles rounded, distinctly broader than the thorax: eyes very small, median frontal sulci rather long and deep, the lateral much shorter, very oblique; sides practically impunctate, elsewhere with somewhat irregularly distributed larger and smaller punctures, towards each side with a group of three larger triangularly placed ones: ground sculpture distinct transverse striate. Antennae with the 3rd. segment longer than the 2nd., 4th. to 10th. transverse, the 5th. to 10th. differing but little. Thorax a little longer than broad, narrowed towards base, the sides arcuately emarginate about the middle, dorsal row of four to six moderate punctures, at the sides with four others widely separated; ground sculpture as on head. Elytra longer and broader than the thorax, with a row of small closely placed punctures externally, elsewhere with larger irregularly distributed ones; ground sculpture absent. Abdomen with a few small scattered punctures and very fine transverse ground sculpture.

KENYA COLONY, N.W. Mau: 8-10,000 feet. Jan. 1946, (Type in B.M.). Katamayu, 1942. This species must be very near *nigrocyanus* Chap. but the abdomen is black without bronze reflex.

5. XANTHOLINUS (S. Str.) POLITUS sp.n.

Shining black. Thorax with dorsal row of five large punctures. Antennae blackish, the first segment dark brown. Femora and tarsi reddish yellow, the tibiae infusate. Length 6 mm. In colour and build very similar to *punctulatus* Payk. The antennae similarly constructed but thinner and also differing as follows; the head is more widened behind, the frontal grooves deeper and longer, the punctures much larger and less numerous, thorax with the punctures of the dorsal row much larger, the elytra much more sparingly punctured on the disc internal to the dorsal series, abdomen with fewer and larger punctures: the whole insect without trace of ground sculpture.

KENYA COLONY, Lukenia; January 1941. Unique. Type in B.M.

6. XANTHOLINUS (S. Str.) TRIPUNCTATUS. sp.n.

Shining black, the elytra brownish yellow on the disc. Thorax with dorsal row of three punctures. Antennae dark reddish brown. Anterior legs pitchy, the middle and posterior with brownish yellow femora, all the tarsi reddish yellow. Length 6.75 mm.

This species would appear to be closely related to *remotus* Epp. but to differ in the colour of the elytra and punctuation of the sides of thorax. Head slightly longer than broad, slightly widened behind, the posterior angles rounded, median sulci deep, almost parallel, the lateral shorter and narrower, the front vertex and post-ocular region impunctate, elsewhere with moderate umbilicate punctures, here and there confluent. Antennae with the 2nd. and 3rd. segments of equal length, 4th. to 9th. transverse, differing but little. Thorax longer than broad (4:3.5) as broad as the head, narrowed towards base, with dorsal row of three punctures, the two anterior close together, the 3rd. widely separated from them, at the sides with a group of three equally large ones. Elytra a little longer and broader than the thorax, with a humeral row of seven or eight small punctures along the suture with a row of smaller punctures, the surface between practically impunctate, the reflexed sides with a row of close punctures. Abdomen with a few small scattered punctures. The whole insect without ground sculpture.

KENYA COLONY, Naro Moru: January 1941. Unique. Type in B.M.

7. XANTHOLINUS INOPINATUS sp.n.

Shining, black, the elytra reddish yellow. Thorax with dorsal row of four or five punctures. Antennæ with the 1st. segment reddish brown, 2nd. reddish yellow, the following black. Legs reddish yellow. Length 5 mm. Readily recognised by the shape of the head and the unusually long middle and posterior tarsi. Head very slightly longer than broad, subquadrate, as broad as the elytra at base. The temples narrowed towards the base, the posterior angles rounded, the eyes large, a little shorter than the temples; median sulci moderately long, narrow, the lateral oblique, shorter; front and vertex impunctate, elsewhere with small moderately close punctures. Antennæ with 3rd. segment a little shorter than 2nd., 4th. to 10th. transverse, gradually increasing in width, the penultimate about twice as broad as long. Thorax a little longer than broad (3:2.3), the sides distinctly emarginate in the posterior half much as in the subgenus *Vulda*, lateral series of punctures seven or eight in number. Elytra longer than broad (4:3), with small, moderately close punctures scarcely in series. Abdomen finely and very sparingly punctured and with a fine transverse ground sculpture. The foreparts without ground sculpture.

UGANDA, Kampala 10th Dec. 1920 (A. F. J. Gedyé). Unique. Type in B.M.

8. GAUROPTERUS GEDYEI sp.n.

Black, moderately shining. Thorax without dorsal row of punctures, near the anterior angles with a puncture. Antennæ black, the first two segments shining, dark reddish brown, femora and tarsi reddish yellow. Tibiæ blackish, length 10 mm. Head quadrate as long as broad, as broad as the thorax, the posterior angles with a minute tooth, median and lateral grooves short, united by a fine stria directed forwards and inward from the latter; the base with a pair of widely separated punctures, behind the eye with two parallel longitudinal sulci, the space between impunctate; ground sculptures absent. Antennæ gradually increasing in width from the 4th. segment, the penultimate about a half broader than long. Thorax longer than broad (6:5), the sides feebly sinuate and retracted behind, with a single puncture at the anterior angle; ground sculpture absent. Elytra as long as the thorax, slightly widened behind, as long as broad posteriorly, with sutural and humeral rows, each of four or five large superficial impressions. Abdomen finely and very sparingly punctured. The whole insect without ground sculpture.

UGANDA, Budongo Forest. October 1936. (A. F. J. Gedyé). Unique. Type in B.M.

10. PHILONTHUS NAIROBIANUS sp.n.

Shining black, the elytra yellow: thorax with dorsal row of four small punctures: abdomen strongly iridescent. Antennæ black, the first segment reddish yellow. Femora reddish yellow, tibiae and tarsi infuscate. Length 9 mm.

A little narrower and smaller than *affinis* Roth., the head and thorax without metallic reflex, the former narrow, suborbicular: antennæ much longer and thinner, the penultimate segments a little longer than broad, the punctures of the dorsal row much smaller, puncturation of elytra a little closer; abdomen scarcely as closely punctured. First segment of posterior tarsus longer than the last.

KENYA COLONY, Nairobi: alt. 5,500 feet. January, 1939. (Dr. D. G. MacInnes). Unique. Type in B.M.

11. PHILONTHUS DISTINGUENDUS sp.n.

Entirely black, shining: thorax with dorsal row of four rather large punctures. Antennæ black. Femora yellowish brown, tibiae and tarsi black. Length 6.5 mm.

In build much like *rectangulus* Shp. but smaller, the antennæ shorter with more transverse penultimate segments, elytra without metallic reflex, abdomen more closely punctured, the basal tergites without median projection. Head transverse, quadrate,

the posterior angles briefly rounded, as broad as the front of the thorax, the eyes large, much longer than the temples, median interocular punctures widely separated, the post-ocular region rather closely punctured, the ground sculpture fine, transverse, not uniform. Antennæ short, the 3rd. segment as long as 2nd., 4th. to 10th. transverse, increasing in width. Thorax as long as broad, slightly narrowed towards the front, ground sculpture at sides and base only. Elytra a little longer and broader than the thorax, broader than long, closely, moderately finely punctured, without ground sculpture. Abdomen closely and finely punctured, the ground sculpture extremely fine. Sides of head, thorax and elytra with long black setae, pubescence of elytra and abdomen rather long and moderately close. First segment of posterior tarsi as long as the last.

KENYA COLONY, Nairobi. November, 1938. (V. G. L. Van Someren). Unique. Type in B.M.

12. *PHILONTHUS MORTUORUM* sp.n.

Shining black, the thorax dark reddish brown with dorsal row of four very fine punctures, the tergites with the posterior margins narrowly reddish. Antennæ reddish. Legs reddish yellow, the tibiae infuscate. Length 6 mm.

In build much like *frigidus* Ksw. but larger and differently coloured. Head suborbicular, very slightly broader than long, the eyes moderate, much shorter than the post-ocular region, narrower than the thorax, the median interocular punctures very small and widely separated. Antennæ stout, the 3rd. segment scarcely shorter than 2nd., 4th. to 6th. slightly longer than broad, decreasing in length, the 7th. to 10th. slightly transverse. Thorax longer than broad (4:3.5), the sides almost parallel, very slightly retracted towards the front, external to the dorsal row with two small punctures. Elytra as long as but broader than the thorax, broader than long (5:4), punctuation fine, asperate, rather close. Abdomen rather finely and closely punctured throughout, the ground sculpture fine and transverse. Pubescence rather long and close on the elytra, and abdomen. Fore parts without ground sculpture. First segment of the posterior tarsus longer than the last.

KENYA COLONY, Nairobi. October, 1937 (A. F. J. Gedyé) In a dead cobra. Unique. Type in B.M.

13. *PHILONTHUS JACKSONI* sp.n.

Black, the fore-parts shining, the abdomen sub-opaque, the elytra greenish metallic. Thorax with dorsal row of five small punctures. Antennæ and legs black, the 1st. segment and femora yellowish red. Length 9 mm. Near *sanguinolentus* Gr. but differently coloured, the thorax longer and narrower, the punctuation and pubescence of the abdomen however very similar. Head transverse, subquadrate, narrower than the thorax, the eyes large, a little longer than the post-ocular region, the posterior angles rounded; median inter-ocular punctures widely separated, close to the juxta-ocular, in the post-ocular region with four or five moderate punctures and a pair before the middle of the base. Antennæ with the 3rd. segment slightly longer than the 2nd., 4th. to 8th. a little longer than broad decreasing in length, (the rest wanting). Thorax as long as broad, the sides straight slightly converging towards apex; punctures of dorsal row small, towards the sides with two others. Elytra a little longer and broader than the thorax (6:5.2) broader than long, moderately finely and moderately closely punctured (but much less finely and less closely than in *sanguinolentus*.) Abdomen extremely finely and closely punctured and pubescent throughout, but not quite so fine and close as in *sanguinolentus*, the ground sculpture very fine and transverse. Fore-parts without ground sculpture. First segment of posterior tarsus slightly longer than the last.

UGANDA, Kalinzu F. October, 1937. 4,000 ft. (T. H. E. Jackson). Unique. Type in B.M.

14. PHILONTHUS MARSHALLI sp.n. (Bernh. in litt.)

Black, shining. Thorax with dorsal row of five moderate punctures. Antennæ black, the 1st. segment below and the 2nd. at base yellow. Femora and tarsi reddish yellow, the 1st. two segments of the middle and posterior blackish, tibiae dark. Length 8 mm.

Build and colour of *immundus* Gyll., but at once distinguished by the much shorter antennæ, the 5th. to 10th. segments distinctly transverse, punctuation of the elytra finer and closer, that of the abdomen closer and much less fine than in *immundus*. First segment of posterior tarsi longer than the last.

SOUTH AFRICA, Natal, Frere. Type in B.M.

15. PHILONTHUS OBSCURATUS sp.n.

Black; thorax with dorsal row of five punctures. Antennæ reddish-brown. Legs reddish yellow. Length 6 mm.

In build much like *quisquiliarius* Gyll., but narrower, the elytra as closely but more finely punctured and without metallic reflex, the abdomen more finely punctured. Head suborbicular, narrower than the thorax, the eyes a little longer than the post-ocular region which is finely and moderately closely punctured; median inter-ocular punctures widely separated, the ground sculpture extremely fine, scarcely visible, not uniform. Antennæ with the 4th. to 8th. segments longer than broad, decreasing in length, the 8th but slightly longer than broad, the rest absent. Thorax slightly longer than broad, scarcely narrowed towards the front, external to the dorsal row with two punctures; ground sculpture absent. Elytra a little longer and broader than the thorax, slightly broader than long, closely and rather finely punctured and without ground sculpture. Abdomen finely and rather closely punctured throughout, finely pubescent and without ground sculpture. First segment of the posterior tarsus not longer than the last.

KENYA COLONY, Maktau, December, 1936 (C. G. MacArthur). Unique. Type in B.M.

16. PHILONTHUS ALTERIUS sp.n.

In most respects like *obscuratus* Cam. and only differs as follows; the punctures of the dorsal row are larger, the elytra less finely punctured and with metallic reflex as in *quisquiliarius* Gyll. The antennæ are blackish with the first segment reddish yellow, the 4th. to 7th. segments are longer than broad, decreasing in length, the 8th. to 10th as long as broad.

17. PHILONTHUS DEBILIFORMIS sp.n.

Colour and build of *debilis* Gr. and only differs from it in the following respects: the antennæ a little longer and more slender, the penultimate segments not transverse, the eyes larger, the post-ocular region shorter, the five punctures of the dorsal row larger, the punctuation of the elytra and abdomen scarcely differ but there is complete absence of ground sculpture on the fore-parts. The first segment of the posterior tarsi is as long as the last. Length 5 mm.

KENYA COLONY, Magadi, May, 1942 (V. G. L. Van Someren). Type in B.M.

18. PHILONTHUS RENOMINATA sp.n.

Shining black, the abdomen slightly iridescent; thorax with dorsal row of six large punctures. Antennæ black, the 1st. segment reddish yellow below. Legs reddish yellow, the tibiae infusate. Length 7.5 mm.

Near *arrovianus* Bernh., but with shorter antennæ, the penultimate only as long as broad. Head subquadrate, transverse, a little narrower than the thorax, the eyes very large, the temples much shorter and retracted to the base, the posterior angles rounded, the median interocular punctures small, nearer to each other than to the lateral, juxta-

ocular punctures large, five in number, before the base with transverse row of four punctures and two others on each side a little before the base and internal to the post-ocular region and obliquely placed. Antennae with the 3rd. segment longer than the 2nd. 4th. to the 6th. a little longer than broad decreasing in length, 7th. to 10th. about as long as broad and differing but little. Thorax very slightly longer than broad, the sides straight and slightly retracted to the front, external to the dorsal row with a row of three others. Scutellum punctured. Elytra longer (7:5.75) and broader than the thorax, broader than long, rather closely and moderately coarsely punctured, distinctly less finely and more deeply than in *arrowianus*. Abdomen closely and rather coarsely punctured at the bases of the anterior segments, much more finely and more sparingly elsewhere. Pubescence scanty. The whole insect without ground sculpture. First segment of posterior tarsi longer than the last.

KENYA COLONY, Nairobi. January, 1938. (A. F. J. Gedye). Unique. Type in B.M.

19. **PHILONTHUS GEDYEI** sp.n.

Black, shining; thorax with dorsal row of six punctures. Antennae and legs black, the femora and tarsi brownish yellow. Length 6 mm.

Much like *ventralis* Gr. in general appearance, but at once distinguished by the dorsal row of six punctures and also in the following respects: The entire, y black antennae with the penultimate segments as long as broad, the head broader, suborbicular only slightly narrower than the thorax, the eyes much smaller, the post-ocular region fully three times longer; thorax narrower, only a little longer than broad with external row of four punctures, elytra with the punctures rather larger but more superficial, abdomen more finely punctured. First segment of posterior tarsus shorter than the last.

KENYA COLONY, Kinangop. June, 1938 alt. 11,000 feet. (A. F. J. Gedye). Unique. Type in B.M.

20. **PHILONTHUS LONDIANUS** sp.n.

This species only differs from *gedyei* Cam. in the elytra having a distinct metallic reflex and being less finely punctured. In all other respects similar. Length 5.5-6 mm. ♂: anterior tarsi not dilated: 6th. sternite with very small arcuate emargination.

KENYA COLONY, Londiani. May, 1936. (H. J. A. Turner). Type in B.M.

21. **PHILONTHUS (GABRIUS) TURNERI** sp.n.

Shining black, the elytra pitchy black. Thorax with dorsal row of five rather large punctures. Antennae black. Legs reddish yellow, the tibiae infusate. Length 5 mm. Colour of *nigritulus* Gr. but more robust and readily recognised by the large head. Head square, the posterior angles rounded, slightly broader than the thorax, the front triangularly impressed, the eye shorter than the temple; median interocular punctures widely separated and with three rather large punctures in an oblique row behind them, the temples with four or five smaller ones; ground sculpture fine but distinct. Antennae with the 3rd. segment as long as the 2nd., 4th. a little longer than broad, 5th. to 7th. as long as broad, the rest absent, Thorax slightly longer than broad, the sides straight and almost parallel, external to the dorsal row of punctures with two others much smaller; ground sculpture as on head. Elytra slightly longer and broader than the thorax, as long as broad. The sculpture as in *nigritulus*. Abdomen closely and finely punctured and pubescent as in that species and with a fine transverse ground sculpture.

KENYA COLONY, Londiani. May, 1936 (H. J. A. Turner). Type in B.M.

22. **BELONUCHUS GEDYEI** sp.n.

Shining black. Antennae and legs black. Length 9 mm. Head quadrate. Broader than long (6.5:4.75), as broad as the thorax, the posterior angles rounded, impressed on

the middle of the front; with a transverse row of four punctures between the eyes, the middle ones widely separated from each other and a similar row at the level of the eyes posteriorly; before the base with a row of about ten punctures, the post-ocular region with two or three others, otherwise impunctate; ground sculpture very fine, transverse. Antennæ short, 3rd. segment as long as 2nd., 4th. slightly longer than broad, 5th. as long as broad, 6th. to 10th. slightly transverse. Thorax as long as broad, the sides very slightly rounded, slightly retracted in front, with a row of five moderate punctures on each side of the middle, at the sides with a group of four or five others, the ground sculpture as on the head, the sides with a few black setæ. Elytra longer than the thorax (7:6.5) with small superficial not very close punctures and without ground sculpture, the sides setiferous. Abdomen finely rather sparingly punctured and pubescent and without ground sculpture, the sides and apex with long black setæ.

KENYA COLONY, Mutha district. Alt. 4,000 feet. August, 1938 Unique. Type in B.M.

23. **STAPHYLINUS (S.Str.) CINCTICOLLIS** sp.n. (Bernhauer in litt.)

Rather dull, the fore-parts greenish bronze: abdomen black, the sides and posterior margins of the tergites yellowish red, bifariate. Antennæ brown, the first two segments and legs reddish yellow. Length 19 mm. Smaller and narrower than *nigriventris* Boh. The fore-parts rather similar in ground colour and sculpture, but with different pubescence and bifariate abdomen. Head narrower than thorax, transverse subquadrate, the temple much shorter than the eye; the anterior border, antennal tubercles and at the inner margin of the eye reddish yellow, the puncturation close, umbilicate, finer than in *nigriventris* and with distinct ground sculpture, the pubescence short golden. Antennæ rather short, the 5th. to 10th. segments transverse and differing but little. Thorax scarcely transverse, all the margins narrowly yellowish red, before the scutellum with a short polished line, the sculpture and pubescence as on the head. Scutellum not tomentose, of the colour and sculpture of the elytra. Elytra as long as but broader than the thorax, the shoulders, lateral and posterior margins reddish yellow, strongly coriaceous, scarcely punctured, the pubescence yellow fine and short. Abdomen black bifariate, the rest of the surface with fine short golden pubescence and with longer, more sparing golden hairs; puncturation fine and close; ground sculpture fine and transverse.

N. W. RHODESIA, Solwezi district. 10. November, 1916. (Dollman). Type in B.M.

24. **STAPHYLINUS (S. Str.) SOLWEZIANUS** sp.n. (Bernhauer in litt.)

Rather dull, head, thorax and abdomen black, the latter bifariate; head and thorax with slight metallic reflex; elytra dark reddish brown with an obscure ill-defined reddish streak across the disc from the shoulder to near the posterior margin, the side margin with two blackish spots. Scutellum not tomentose. Antennæ reddish brown, the first segment reddish yellow infusate above. Legs reddish yellow, the tibiae infusate. Length 13 mm.

Build of *cincticollis* Cam. but smaller, with differently coloured fore-parts, the head and thorax with rather coarser and deeper punctures and without the distinct ground sculpture of that species. The pubescence of the two species scarcely differs and in other respects similar.

N. W. RHODESIA, Solwezi district, 10. November, 1916. (Dollman). Type in B.M.

25. **STAPHYLINUS (ABERNUS) RHODESIANUS** sp.n. (Bernh. in litt.)

Scarcely shining, blackish brown with feeble metallic reflex on the fore-parts; the inner margin of the eye sometimes with an obscure reddish line rarely prolonged to the base, the margins of the thorax scarcely reddish: scutellum black, tomentose. Elytra with two black spots on the reflexed sides: abdomen black, bifariate. Antennæ black, the first two segments reddish yellow. Legs reddish yellow, the tibiae and tarsi blackish. Length 14-15 mm.

More robust than *solweesianus* Cam. and of darker colour, the head transverse subquadrate with more briefly rounded posterior angles; sculpture of head, thorax and abdomen coarser, the scutellum tomentose: in other respects similar.

This species differs from the typical subgenus *Abernus* in the mesosternal process being rounded at apex and extending half the length of the coxae which are distinctly separated.

N. W. RHODESIA, Lusala (Dollman).

KENYA COLONY, Ngong. May, 1945. (V. G. Van Someren). Type in B.M.

26. *ONTHOLESTES GRACILENTUS* sp.n.

Fore-parts greenish bronze, the posterior margin of the thorax narrowly reddish: abdomen black, the side and posterior margin of the first three visible tergites rufescent. Antennæ black. Legs reddish yellow, the tibiae infusate, the tarsi black. Length 11 mm. A slender species. Head a little broader than the thorax, eyes very large and prominent, temples very short, vertex with a short raised shining line in the middle, the puncturation close and umbilicate as in *africanus* Bernh. with short scanty golden hairs. Antennæ slender, in length 7th. as long as broad, 8th. to 10th. slightly transverse. Thorax slightly longer than broad, the sides straight, retracted to the base, the posterior angles rounded, the anterior rectangular, adjacent to the side margin in the posterior half with an elongate impression, the sculpture as on the head. Scutellum black, tomentose, along the middle with a line of golden pubescence. Elytra longer (7.5:6) and broader than the thorax, about as long as broad, the puncturation of similar character but smaller, with short golden pubescence and scanty black setæ, each with about five small patches of short white hairs. Abdomen narrowed towards apex, rather finely and closely punctured, the 1st. visible tergite on each side of the middle with a dense patch of golden brown pubescence, the 2nd. and 3rd. with moderately close, short golden hairs, and longer yellow and black setæ, the 4th. more densely covered with brown and golden hairs, 5th. with close long black pubescence with spots of short silvery hairs, 6th. much more sparingly black, pubescent.

♂: anterior tarsi strongly dilated.

UGANDA: Bwamba 7th August, 1946. (Van Someren). Unique. Type in B.M.

27. *TRIGONOPALPUS* gen.n.

Very near *Pannegus* Fauv. but with broader neck, much shorter 4th. segment of the maxillary palpi, the mesosternal process shorter, broadly rounded at apex and not carinate, the middle coxae more widely separated, the 1st segment of the posterior tarsus shorter, only as long as the 2nd. and 3rd. segments together and long coarse close pubescence especially at the sides of the abdomen. The structure of the maxillary and labial palpi scarcely differs from that of *Tympanophorus* Nordm.

28. *TRIGONOPALPUS PILOSUS* sp.n.

Shining black, the antennæ black, the first two segments and legs yellowish red, the tibiae infusate. Length 9 mm. In build much like *Tympanophorus rugosus* Wath., but smaller and with narrower head and different sculpture. Head suborbicular, transverse, narrower than the thorax, the eyes large, scarcely shorter than the post-ocular region, on the vertex with a small impunctate area, elsewhere with small rather close simple punctures and long white pubescence. Antennæ short and stout, extending back to about the middle of the thorax, the 2nd. segment shorter than the 3rd., 4th. to 10th. transverse, gradually increasing in width, the penultimate about twice as broad as long. Thorax transverse (5.5:5), the sides a little more retracted behind than in front, gently rounded and with long black setæ, the angles broadly rounded, the sculpture and pubescence as on the head. Elytra longer (6:5.5) and broader than the thorax, broader than long (7:6), rather finely, closely, asperately, punctured, the suture and posterior margin

fringed with long white hairs, elsewhere with shorter black pubescence, the sides with two or three long black setæ. Abdomen a little narrowed towards apex, moderately finely and moderately closely punctured, on each side of the first three visible tergites at their bases with a tuft of white pubescence, the lateral margin itself at the bases of the first four tergites each with a similar tuft, the posterior half of the 5th. visible tergite closely covered with short white pubescence, elsewhere with long black hairs especially along the sides. Tibiæ spinose and closely covered with white pubescence, the tarsi also. The whole insect without ground sculpture.

UGANDA: Kamengo For. 3,500 ft. October, 1937. (T. H. E. Jackson). Unique Type in B.M.

29. *HETEROGASTER* gen.n.

In build much like *Dysanellus* Bernh. but with different mouth parts, systematically near *Xanthopygus* Kr. but differs in the shorter maxillary palpi, the 4th. segment only as long as the 3rd., the longer labial palpi, absence of pronotal epimera, longer middle and posterior tarsi their first segments much longer and the abdomen without incurved basal lines on the anterior tergites. Head without infra-orbital ridge. Labrum bilobed. Mandibles slender pointed, the right with a sharp tooth about the middle, the left with an obtuse one. Maxillary palpi with the third segment about as long as the 2nd. but stouter towards the apex, 4th. as long as but more slender than the 3rd., pointed. Labial palpi with the 1st. segment rather long, 2nd. longer, the 3rd. yet longer than the 2nd. Pronotal epimera absent. Mesosternum simple, its process extending half the length of the coxæ, the apex rounded, the coxæ rather widely separated; metasternal process extending well between the coxæ and separated from the mesosternum by a short intersternal piece. Anterior tarsi strongly dilated (at least in the ♂). Tibiæ spinose. Middle and posterior tarsi with the 1st. segment longer than the last, as long as 2nd., 3rd. and 4th. together.

30. *HETEROGASTER* NIGER. sp.n.

Black, head and thorax shining, elytra and abdomen duller. Antennæ and legs black. Length 9 mm. Head transverse suborbicular, a little narrower than the thorax, the eye a little shorter than the post-ocular region, between the eyes with a transverse row of four punctures, the median more widely separated from each other than from the lateral which are against the eyes; post-ocular region with a few punctures. Antennæ with the 3rd. segment as long as the 2nd., 4th. to 7th. very slightly transverse, the rest wanting. Thorax slightly longer than broad (6:5.5), the sides almost straight, very slightly retracted towards the front, the posterior angles broadly rounded, on each side with an oblique row of three small widely separated punctures, one near the anterior angle, the 2nd. before, the 3rd. behind the middle, the sides impunctate. Scutellum closely punctured. Elytra a little broader but scarcely longer than the thorax, broader than long, closely, rather coarsely and roughly punctured. Abdomen a little narrowed at the apex, closely and more finely punctured than the elytra, scarcely less closely behind, the pubescence black, ground sculpture fine and transverse. Head and thorax without pubescence or ground sculpture.

♂: anterior tarsi strongly dilated: 6th. sternite with broad arcuate emargination occupying nearly the whole width.

KENYA COLONY: Emali Range. Sultan Hamud, alt. 4,900-5,900 feet. March 1940. Unique. Type in B.M.

31. *QUEDIUS* (S. Str.) *CINCTIPENNIS* sp. n.

Moderately shining, black, the suture reflexed, sides and postero-external angles of the elytra and posterior margins of the tergites distinctly reddish yellow. Antennæ and legs reddish yellow. Length 9.5 mm. Readily recognised by the colour. Head

narrower than thorax, suborbicular, the eye large, fully twice as long as the post-ocular region: except for a juxta-ocular puncture and three or four post-ocular ones, impunctate, the ground sculpture fine and transverse. Antennæ with 2nd and 3rd segments sub-equal, 4th and 5th almost as long as broad, 6th to 10th, slightly transverse differing but little. Thorax as long as broad, the sides nearly straight, slightly retracted towards the front, with a pair of small widely separated punctures behind the middle and two or three others near the anterior angles, otherwise impunctate; ground sculpture as on head. Scutellum finely punctured and pubescent. Elytra a little longer and broader than the thorax, broader than long, finely and rather closely punctured, ground sculpture absent. Abdomen narrowed towards apex, finely, moderately closely punctured on the anterior tergites, more sparingly behind; ground sculpture very fine.

KENYA COLONY: Kanziko; January, 1942. Type in B.M.

32. **GLYPHESTHUS NIGERRIMUS** sp. n.

Shining black. Antennæ and legs black, tarsi reddish. Length 14 mm. At once distinguished from *niger* Kr. by the almost impunctate 7th tergite. Head transverse, subquadrate, a little narrower than the thorax, the eye distinctly longer than the temple; median pair of interocular punctures widely separated; near the eye posteriorly with a group of four moderate umbilicate punctures, before the base on each side, with three others in an oblique row, the post-ocular region with four or five more. Antennæ stout extending backwards to about the middle of the thorax, the 1st. segment stout, thickened towards apex, 2nd very short, scarcely visible, 3rd as long as the 1st, but less thickened apically, 4th to 10th transverse, flattened, scarcely differing, closely and briefly pubescent. Thorax slightly transverse, the sides gently rounded, a little more retracted behind than in front, with a dorsal row of three punctures, one at the anterior border, the two others close together before the middle. Scutellum impunctate at the base, at the apex with a few small punctures. Elytra longer and broader than the thorax, rather coarsely and closely punctured. Abdomen practically impunctate along the middle, at the sides with a few setiferous punctures, the posterior margins of the 5th, 6th and 7th segments with short deep impressions, the 8th with small close teeth, ground sculpture uniform on the 5th to 8th segments, absent or scarcely perceptible elsewhere. Fore parts without ground sculpture.

KENYA COLONY: Kitui, October 1937 (Type). Voi, December 1936. Mutha November 1937. Type in B.M.



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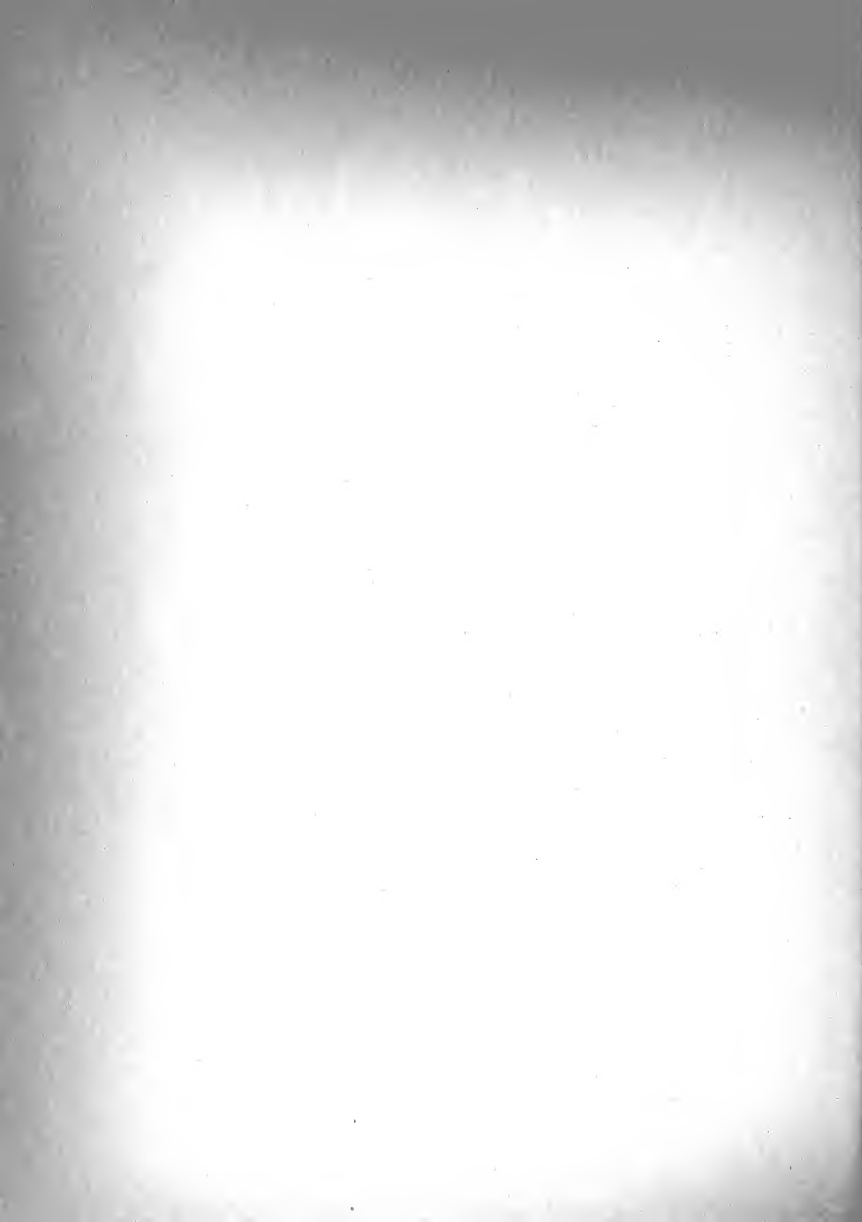
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The last issue of the Journal of the East African Natural History Society should be numbered:

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It is regretted that the numbering of the ^{last} ~~last~~ journal was incorrect. This should have been:

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NOTES ON A COLLECTING TRIP TO BELGIAN CONGO.

By T. H. E. JACKSON, F.R.E.S.

[This Diary was addressed, originally, to Prof. G. D. Hale-Carpenter, M.B.E., with whose permission it is published here. To those who have experience the fascination of collecting in a new area, it may strike a chord and to others, who have not, it may prove, I hope, an inspiration.]

Lutoto Camp, Ankole, 13-8-1946.

Dear Carpenter,

I am going to amuse myself by writing you a diary of events on this safari — it will bore you stiff no doubt, but you have the remedy that you need not read it, and in any case it has one great advantage, that no answer is required!

Well, I left the farm on the 8th, rain, clouds and arctic conditions and I had no regrets, but just to keep me humble I suppose, I had a shocking trip — a blow-out 12 miles from the house — both tyre and tube a complete write-off — no tyres or tubes anywhere in Uganda. I managed to scounage an old tube in Tororo, and an old tyre (very) in Kampala. Then another blow out 10 miles from Masaka, and both again rent in twain, so I spent the night in Masaka at the Rest Camp and reorganised the tyres. Really these days of 'ersatz' tyres or no tyres at all, are not made for safari, but it's 9 years since I was in Uganda and the Congo, and I'm determined to get there. I think the hoodoo turned in Masaka, because on Monday morning when I was being met with the usual story, "Sorry there are no tyres or tubes in Masaka," up came two of the Govt. people, who I had met in the past, and one lent me an old tyre and the other a tube! So off I went again at 10.30, and did the 150 miles to Lutoto without further trouble. This is only about 120 miles from my first objective, Beni, in the Ituri Forest, so I have hopes!

13.8: This morning was dull and cloudy, and there was heavy rain during the night — it is a very wet year and has been raining solidly almost all the way down — but by 10 o'clock it cleared and I went down to the Kalinzu Forest, about 7 miles from here, and had my first day's collecting. As might be expected after 9 years, all my old paths were closed and overgrown, but a new one has been made by pitsawyers higher up in the forest.

The result of the day was interesting but not spectacular. The Kalinzu *Cymothoe indamora amorinda* was plentiful, the two new (to Uganda?) Bwamba *Euphaedras*, *xypete cyanea*, and *eberti* both turned up, neither of which I have seen from Kalinzu before, and finally I got a *Deudorix* (sens Auriv), which is new to me, brilliant blue above and below resembling a *Hypolycaena*, such as *philippus*, though with a much darker ground. I thought it was a *Hypolycaena*, until I had it in my hand.*

This evening after some much needed tea — Kalinzu is a strenuous forest, with slopes that would be the envy of Wembley directors! — I wandered down into the small patch of forest below the camp and found first a spider, which is the most wonderful ant mimic I have ever seen — it builds a thin, practically invisible web like a small flat roof over the midrib of a leaf, fully exposed, and sits under it with its prolegs thrust out in front and angled, like the antennae of a *Pheidole ant*. When disturbed it runs in and out exactly as does an ant. The thorax, abdomen etc., are coloured and shaped just as in *Pheidole*. Next I found a *Reduviid* sucking a common, but very poisonous looking *Chrysomelid* beetle, red and orange.

* This proved to be *Pilodeudorix zelomima* Rebel, a rare specie of which this ♂ is the only example I have seen.

I am interested in the two *Euphaedra* mentioned above; in this particular area they were reasonably common, yet previous intensive collecting in Kalinzu has never produced either species. It is additional proof that a forest is never homogenous, but that species occur in "islands" in each forest, the boundaries of which they seem incapable of crossing successfully. The answer, of course, should be purely botanical, but although I am not a botanist myself, I am still inclined to doubt if this is the whole of it. The two species of *Euphaedra* were caught within $\frac{1}{2}$ mile of our old old collecting grounds! The "island" habit is particularly noticeable in regard to the *Nymphalinea*, especially in *Euphaedra*, *Diestogyna* and *Euryphene*; often the "islands" overlap, for instance today I saw *E. zaddachi* and its form *christyi* and *E. sarita inanoides*, the common Kalinzu species of *Euphaedra*, but *preussi* was absent, and does not appear to occur in Kalizu.

14.8: A dull cloudy day throughout. I amused myself by collecting beetles off a fallen tree, which had reached just that stage of fermentation most attractive to Coleoptera, I took *Buprestids*, *Carabids*, *Curculionids* and some interesting *Brentids* with long curved extensions to the head.

Tomorrow then, I brave the Police and Customs on the border—you have no idea of the red-tape involved in moving these days. You need a permit to move your car, a permit to move yourself! Vaccination and yellow-fever certificates, a cancellation receipt for your ration-book, and of course, your Passport and Visa. Why, I wonder, when the War has been over a year?

15.8: *Beni*. Well, I am through, and what is more I have a fine brick-built Rest House in the forest all to myself!

The Customs went off all right—our people were interested only in my car; they always are, though why, exactly, escapes me. I cannot see who could be interested in my exporting a 1935 Ford! The Belgians also took an interest in the car, to the extent of several forms in quadruplicate! Also in cameras, guns, pistols, etc. I signed a form giving the Christian names of my father and mother (both deceased)! and a lot of other information, and then committed a tactical error. Since it was about lunch time, I said in all innocence, in my best French, "Monsieur, will you have a drink with me?" Unfortunately he understood and said, "Monsieur, I don't drink, and what is more, do you know that the import of alcohol into the Congo is forbidden? I shall have to see all of it!!!!" Since that meant unloading the whole car, with still 50 miles and a bad road to do, I was a bit disconcerted. However, just at that moment two Belgians arrived, and so I paid Fr.100 and left it at that!

The road is definitely bad, for the first 35-40 miles it runs through the Parc Nationale Albert, and is quite uninhabited—low swampy country on the edge of Lake Edward, and very bad to be stranded in. I had a fine view of some elephant bathing in one of the rivers—an old cow was washing her calf and others spraying themselves.

16.8: Again a dully cloudy day, but as I had, anyway, to report at the D.C.'s Office, it did not matter. Also, I did a very good stroke of business, and secured two new tyres and tubes and had them fitted, so now "I don't care if it snows"! In the afternoon, still very dull, I investigated some sawyers' paths and took a few things, among them a few of that lovely species *Cymoethoe aramis* and a fine male of *Euryphene rubrocostata*, also a *Mylothris* new to me.* On the way back down one of the paths in dense forest, I caught a large greenish *Cicindelia*, rather a strange place for it to be?

* *M. nubila canescens* J. and T.

Some of the flowers are new to me naturally; there are two fine Balsams out at the moment, one orange, the other crimson, and there's an interesting low-growing Acanthaceous plant with loose pyramids of mauvy-pink flowers. Unfortunately this time I had no room for botanical collecting kit.

There are some very nice people in Beni and they have been extremely good to me—.

17/8: A deluge practically all day! It's funny that having travelled some 600 miles, partly, at least in order to get away from perpetual rain, I have merely succeeded in changing the scenery! In the afternoon, in a thick fog, I explored north towards *Irumu* and found a good side road going through the forest to the east; at least it might be good if the sun ever comes out. I spent the evening collecting *Tipulidae* for the B.M. and in an hour or so got about 30, comprising at least 10 different species, one of them belongs to the "dancing" group with long white-tipped legs.

It's fortunate that one group likes this weather, though I don't admire them for it. However "tomorrow is another day", though judging by general conditions I'm am not very hopeful—there's plenty of timber about, for arks, which is something!

There's nothing so depressing as a wet forest nor, be it said, anything so enchanting as a forest in sunlight.

18/8: The morning looked better and so it proved ending in a fine sunny afternoon and evening and in spite of a good many dull, cloudy hours, I amassed quite a good collection. In the morning *Euryphene*, *Euphadra*, *Diestogyna*, etc., of which *E. rubrocostata* appears to be common here, *E. plisonax*, and a new one of the *absolon* group; *D. amaranta*, *goniogramma* and again a new one, are worth a mention. The *Euphadra* consisted of various forms of *eleus*, *xypete*, *medon*, and *preussi*, but nothing noteworthy. Then at about 2 o'clock, I found a place where a tree had been felled and sawn up; it was well-cleared around, with lots of dead wood about and looked an ideal *Liptenine* locality. The sun was trying to come out and it gradually got lighter, until that stage of half sunlight was reached, which *Liptenines* like and out they came and started laying among the dead twigs and branches. That most delicate of all African butterflies *Argyrocheila undifera* came first and in the end I got two, also a very small *Liptena*, white, with smoky apex to the forewing, and a larger species similarly coloured rather like Talbot's *hapale*. *Pentila abraxas*, also was in evidence. There's no doubt about it that all these small white *Liptenines* belong to a Mendellian association with, I think, *Megalopalpus zymna* as the dominant member, although the *Pierines* may be the ultimate model* they fly much faster and quite differently and are much larger and, more important still, usually fly in different parts of the forest i.e. the more open clearings, whereas *zymna* flops about all over the dense shady areas and appears to be quite unconcerned as to whom may be watching. I think the *Oboronia* are members of this group, but they appear to be rare here. Along the path, in only a few hundred yards, I took an interesting little *Lycid* mimetic series, which are in your box—2 *Lycids*, 2 *Cerambycids*, a *Reduviid* and a fine *Asilid* . . . The great point of interest, was that the latter in action, had two distinct modes of protection, first it buzzed like a wasp and much more striking it flew slowly, quite unlike the usual quick darting flight of an *Asilid*, and with its' black abdomen drooping down just as does the *Lycid* beetle. I flushed it three or four times to make sure, before I caught it and each time it flew straight on about 4 yards and then down on the ground. Each time

* See later—the true models are small black and white day-flying moths. In the absence of evidence of distastefulness "Mendelian" is not the correct term.

a display of black abdomen and rufous wings! Tomorrow I'm going to look out for the wasp, which I feel sure will also be present, also perhaps, a moth or two and you shall have them all later on.

Finally coming back for the last time, I came across an *Aletis* flapping along the ground and obviously injured so I caught it and found that both forewings had been torn off, but that otherwise it was uninjured. Since the body and hindwings are fully developed, I doubt, if it is a case of failure to emerge properly from the pupa and I feel sure it was caught by a bird, or mantis and escaped with the loss of its' forewings.

The night is clear and starry, so I hope to have lots more to tell you tomorrow. There was one point of botanical interest worth mentioning to day—a delicate, thin-stemmed creeper grows fairly commonly in the forest, *Curcubitaceae*, it does not seem to mind even dense shade. The stem bears at intervals of about 4" the usual small marrow-like fruits, but in this species they grow first, the flower then appears from the lower end, a small green rosette and when fertilised and ripe the seed appears as 4 or 5 bright yellow fingers with scarlet tips, hanging from the end of the "marrow". The latter is clothed in maroon coloured hair. Its' a most striking looking plant. I'm afraid George Taylor will never forgive me for not bringing botanical kit, but, although a press is easy enough, I doubt if there is any real substitute for blotting paper. Beni *might* supply.

19/8: Heavy cloud all day until 3 o'clock, much too late to do any good—I went, on the Chief's advice, and had a look at what he calls his handaki in Swahili a "trench", but in this case a cutting through the forest. I should be good, particularly as it ends in a clearing of about 3 acres, covered with felled trees and ideal for *Lipteninae*, but the snag is it is too populous.

There is a big Watanga Village on the outskirts and the forest itself is full of Pygmies—one is followed by hordes all day and no sooner does one get rid of one lot, another batch arrives. I like to be alone when collecting! The Pygmies are a strange and interesting little people, and must be most exciting to an anthropologist, the features, foreheads, eye-sockets, etc. are extraordinarily simian and if one watches a crowd of kids, playing in the forest, swinging on the creepers and climbing over tree trunks, it only needs some fur and a tail to make an ape! They wear nothing, but a cloth strip covering the genitals and tied up behind between the legs and I feel sure this is a recent innovation! In spite of the weather I had two noteworthy captures, a fine *Hawitsonia boisduvali* and a female *Ps. ruhamia*. I also took one *Liptena undina* and this is the first time I have seen it since years ago in Budongo,—and that was all! Your *Lycid* group grows, several more models, two more spp. of *Cerambycidae*, and another interesting looking beetle which I can't place; it might be a *Cleriid*.

Lastly on the path, again, I took another escapee—this time *Acræa egina*, crippled as to wings, but otherwise intact—again it isn't easy to determine what was the aggressor, but this time, I think, a bird, since the tip of the one remaining forewing is nearly, severed across in a straight line.

There is nothing further to report, so good-night.

20/8: In spite of my usual battle with the elements,—the sun appeared for about 2½ hours,—things improved in the Lepidoptera line—a male and female *Abisara rutherfordi*, a fine little species, which I have never seen before. The fact that the male has blue patches on the hindwing, and the female on the forewing intrigues me and seems difficult to explain. The females of the other purple species *talantus*, from Kalinzu, are much duller coloured than the males and since all *Abisara* sit

with their wings half open it seems strange that *rutherfordi* female should deliberately show a bright blue patch on the forewing. Then a male *Ps. hostilia walburgi* met its match and will go down to posterity! and a little later, I saw an interesting form of, I imagine, *Ps. dolomena*—the f.w. had red bars and the h.w. yellow, but it never came within reach.*1.

Another interesting find was a male *Euryphene congolensis*. I have been looking for this for a long time, since we originally thought our *brunhilda* from Budongo was this species, until I took it home and compared it at the B.M. There is no doubt that this is *congolensis* with its large quadrate yellow spot in space 7 of the h.w. below. There remains *iturina* to be found, I would very much like to know, some day, when you have a few minutes to spare at the B.M., exactly how *iturina* differs below from *lattioides*.

A new species of the mauve barred *Mycalesis*,*2 also came my way, *M. medontias*, a very distinct form, and early in the day in a clearing I came across two of my Katera *Liptena rubromaculata*, the *Vanessula* mimic, but I think this will prove to be the typical form. Unfortunately I bungled it and only got one.

Another *Argyrocheila*, a fine male *Ch. protoclea*, of the typical western form, several more *E. rubrocostata*, and two more *Cy. aramis* complete the noteworthy captures today.

On the whole, so far, I am rather disappointed with the Ituri, (I can hear you, after reading these lists of new spp.; say "why"?), but there is comparatively little about and not nearly the number of spp. different to Bwamba and Uganda generally, that I expected. Of course the weather has been atrocious and I should think, judging by my one previous brief visit years ago, when the whole forest was alive with butterflies, that August is a bad month.

Perhaps, in a week or so the deluge will be over and things will begin to hatch. But whereas on that former visit, in 3 hours I took 18 spp. new to me and one did not know which to catch first, this time one has to search for any butterfly at all and even the ubiquitous *Hesperiid* is rarely in evidence!

21/8: I went into Beni today to buy a few things and had an excellent lunch in the hotel. It rained all night and practically all day! On the way back I had a brief look at the forest, very dark and wet. The *E. preussi* race is quite different to most of Uganda, but probably the same as that at Bwamba. The male is greenish with a rather broad green sub-apical bar, indistinctly defined as to its' edges and the female has pale blue markings following *xpete*, *inanoides*, etc., but with a white apical bar. I took a fresh female today, also *larinopoda lagyra* and *D. goniogramma* male, otherwise nothing of interest. Another finer species of *Cerambycid* however, has been added to your *Lycid* group and one more of that other beetle, family unknown!

22/8: My first fine day! I went again to my saw-miller's paths rather than face the pygmic hordes!

The first great capture was three males of *Cymothæ anitorgis*, it is a lovely thing and quite distinct from *aramis*. The colour is halfway between the orange red. of *aramis* and the blood-red of *sangaris*. On the hindwing costa, midway, is a large whitish quadrate spot above and below and the margins of both wings are beautifully scalloped and fringed with white.

* This proved eventually, to be a female form of *Cymothæ aramis* Hew.

† Now *Bicyclus*.

It is strange and shows the "off season" that it is at present, that although I have seen quite a number of these red *Cymotha*, not a single female has appeared, whereas on that previous visit, I mentioned earlier, I took, 7 or 8 females of the two spp. *aramis* and *anitorgis* in my 3 hours!

The second insect in importance was *Euryphene congolensis*, again 3 males. Having got that first one off the boards, I find it is the male of my new female *Euryphene* described on the 18" as "a new one of the *absolon* group". The male appears to agree with Aurivillius' description, tho' the yellow costal spot below on the h.w., is not exactly quadrate, it is, however, yellow and is square on the costal edge. My female definitely belongs to it. Either, then, this isn't *congolensis*, or Aurivillius has placed the wrong female to his species and put it in the wrong group. The female of this species is a *catuna* mimic and therefore belongs to the *carshena* group, but it achieves its purpose in a most interesting way. It does not depart one iota from the pattern of the male, every line and spot is faithfully reproduced, but the ground colour, instead of being black, is *Catuna*-brown and the red median bands on both wings are replaced by yellow.

Below it is the same, the lighter brown bands of the one replaced by the pale whitish yellow colour of *Catuna*, and the darker sub-basal spots of the male h.w. are in the female chocolate-brown, but each spot and line is copied exactly. Most of the females of these sexually dimorphic *Nymphalinae* show considerable differences in pattern, and the only safe test is usually the shape of the median line below and I believe, therefore, that this species evolved in a slightly different way, i.e. through, slight colour mutations in the spots of the median bands. We shall have to wait until you can take one to the B.M. and compare it before deciding its' identity, but if it is not *congolensis*, it is not in Seitz.*

Thirdly I got another of the mauve barred *Mycalesis*, this time *M. hewitsoni*—an unusual and interesting species, with its mauve marginal bands on the hindwing. Other things were *Hypolimnas mechowii*, *Anthene rufoplagata*, several *Larinopoda lagyra*, a magnificent *planemoides* female of *dardanus*, *Papilio zenobia*, etc. etc.

To your Lycid group were added 3 more spp. of *Cerambycids*, making now 6 or 7, another of the *Reduviid* bugs, another small beetle, possibly *Chrysomelid*, with black elytra and red thorax and head and another beetle, which I know, but cannot remember!, with the carapace widened and leaf-like behind the head. The most interesting was one of the "Longicorns", which has definitely gone one step further and modified its antennæ towards the *Lycidæ*. They are carried wide apart and straight up in front when in flight, rather than curved at the tip, as in ordinary *cerambycids* and are further modified to resemble a *Lycid* by having the first three segments broadened by a thick clothing of black, spiny hair. There is also a "kink" after the first segment, possibly to enable the insect to hold its antennæ erect? It is a most interesting thing and you'll have no difficulty in recognising it in the box.

I put also in your box another *Cerambycid* and a *Chrysomelid*. At first sight there isn't much resemblance, but when in flight I cannot tell them apart and, I think, if set out, you will see what I mean.

Both are sun-loving spp. and occur commonly in the clearings, though the latter is much the commonest, of course, and occurs in many forms. The body and hind-wings, which are chiefly seen in flight are in both cases orange-yellow; another thing, I have included is a fine Syntomid wasp-mimic, metallic blue with red thorax, which I watched for some considerable time, flying in a clearing, before deciding it wasn't

* It was *Euryphene cottoni* B.B. and it is in Seitz!.

a wasp! And finally 3 spp. of the common black and white, day-flying, *Lymantrids*, because when discussing *M. zymna* and it's *Liptenine* mimics the other day, I forgot to mention these moths, which are obviously the purely Batesian models. They fly all day and all hours of the day in the thick forest, together with *zymna* and the *Liptenines*.

The boy is pestering me to have dinner, so that he can go to bed—it's 9 o'clock, so perhaps he's right and in any case you'll have had enough of this! It has been a grand day!

23/8: There was one other interesting thing I forgot to tell you yesterday. On these safaris I always bring a small box of boards, a store box and a few pins and in the evenings set up anything especially interesting in order to examine them and know where I am. So the other day I set that female of *Ps. ruhamana*. It had a chunk out of the right hindwing, but seemed otherwise undamaged. Yesterday, however, I took it off the board and right across the right forewing is a beautiful double beak-mark!—so, you will have to have this as soon as I get home. It is significant that that makes the third probable bird attack, the *Aleiis* and *Ac. egina* being the others, in under a week, even more significant, I think, in a dense tropical forest such as this.

Well today dawned clear, clouded over early and the cleared again and by midday I had practically nothing at all. However I went back to a place where I had put some leopard "bait" in a strategic position for *Charaxes* and then occurred one of the great moments in a collectors life. There, amongst about 6 or 7 other *Charaxes*, was a magnificent male *Charaxes hadrianus*. I committed the usual folly, under such circumstances, of completely losing my nerve, I nearly fell over a root, I trod on a dead branch, which went off like a rifle shot. I did everything that one should not do, but I got him!! I think, of all the *Charaxes*, it is the strangest and most beautiful, though perhaps *nobilis* runs him close. He was in absolute perfect condition and I just sat and gazed at him in my hand and didn't even notice that I was practically sitting on a highly odiferous bait!! So much for him, I had the same thrill years ago, when I got another at Katera.

The day produced also 3 males and 1 female of *Cymothæ diphyia*, which was new to me—one male and the female are fresh specimens—the latter resembles the female of *Cymothæ lurida hesiodotus* most faithfully. Of lesser importance, 2 more males *Cy. anitorgis*, 1 male *Cy. aramis*, 1 male *D. amaranta*, and a female of *D. tadema*, the latter being new to me. Quite late in the afternoon I took another purple *Abisara*, which I imagined was *rutherfordi*, but having killed it, it was obviously not that species. I then thought it was the Kalinzu *talanta cæca* of Ripley, but, in setting it, I found that practically the whole hindwing is blue—it will have to wait till I can consult Riley's paper at home, but it is not in Seitz.*

I got another of those *Cerambycids* with the strange antennæ and two other beetles for the *Lycid* group, one a *Chrysomelid* the other unknown! The forest is literally swarming with these *Lycids* and their mimics and, after the common *Chrysomelids*, they are the commonest insects one sees in flight, I think tomorrow I shall try further afield, if the day looks at all possible. The local populace will insist on collecting for me in spite of daily protests; I come back in the evening and find tins-ful of mashed *Acraeas*, which I promptly tip out on the grass.

This evening the usual tin was produced, a few *Pierines*, one *D. chrysippus*, and masses of *Acraeas*; *lycoa*, *alciope*, *egina*, etc.

* *Abisara tantalus* Hew, male. Once again it is in Zeitz.

I tipped them all out on the ground, some still alive when I noticed that a pied wagtail was watching the operation with great interest. So I stepped back into the verandah and waited and sure enough up he came. He made an immediate dive at a female *A. lycoa*, dropped it, had another shot and dropped it again, then tackled a female *A. egina*, worried it and dropped it and then lost interest altogether. So my daily penance of receiving tins of butterfly-jam, had some slight recompense in interest today. I spent a lot of time in the dull moments today collecting beetles, etc. for the B.M. and for the Coryndon—there are some amazing insects in this forest. A *Reduviid*, whose fore-tibiae are modified into large flat paddle-shaped organs, covered with spines and with the tarsi, fully jointed and with bifid claws, sticking out in front, but minute in size—an *Ichneumon* whose hind tibiae are swollen and bulbous and the tarsi are carried permanently doubled up underneath them, so that, when flying, the insect looks as if it had three abdomens!! An *Elaterid* with it's thorax as long as, if not longer than, the abdomen and several amazing *Brethids*.

24/8: There is nothing very much to tell you today—I went as I said further away, a good deal further in fact, as you'll see! I took a side road which I had been told led to a saw-mill. It is about 20 Km. from here and I thought the mill would be a mile or so in—it wasn't!, and further more it wasn't a mill, but an experimental, rice growing station!, in process of clearing and the road was frightful and went straight down the side of the Rift Valley, almost to the bottom. Having started, I determined to get there and, in any case, had no option, since one couldn't turn round!

It's curious how often these "further afield" visits end in disappointment, I could have got nearly everything I saw here and probably more of them! Amongst the usual *Euryphene* were *barce*, *brunhilda* and *zonara*, which I haven't seen here, but are *Bwamba* spp. Two *Ps. enrytus* one *terra* and one *tirikenis*, however, were interesting, as showing a big stride west for these forms. I'll send them to you later and finally, I saw a female *Cy. anitorgis* and missed it. Then I came back and since it was by then about 2 o'clock, I went down through the village and braved the pygmies! and being Saturday afternoon and no work going on, got away with it! Here I did better, a male and female *Cy. herminia*, typical, and a female of another *Cymothæ* which reminds me of the *Kalinzu indamora amorinda* and may be the typical race, but these black and white *Cymothæ* are very difficult.* Also another of the new *Abisara* of yesterday and a bad specimen of *Deudorix otreada*. Incidentally there's an interesting case of resemblance, in relation to the latter here, in the shape of an *Epamera*, one of which I caught earlier today—it is almost exactly the same below with the same dark border running into the red post-discal line.†

It has been a very strenuous and rather abortive day, but one always has to try these things once, just to prove one isn't missing a butterfly paradise just round the next bend!

I got some fine *Buprestids* and *Cerambycids* in the rice clearing, but nothing much else in the beetle line.

I'm very disappointed in the general lack of *Liptenines* here, I had expected many new spp., and so far have taken one and even the few that are here, are rare. I got, however, one nice *Telipna* today down the hill. Tomorrow I shall catch *antimachus* down the saw-pit path!!

I stopped today on the way back to take a few photos of a pygmy village—they live, in tiny little beehive huts, in dense forest and roof them with banana leaves. The

* *Cy. indamora indamora* Hew.

† *Epamera* sp. nov.

men were away, but the women all came out and posed amid shrieks and giggles. What amused me was that the girls paint themselves in fascinating patterns with what must surely be a type of woad, but the painting is only done on the face and on the posterior!! The eternal Eve!, should we, do you think, suggest this as a new Paris fashion?!

25/8: Very little seemed to be moving today in spite of fairly reasonable weather—I imagine everything is waiting for more settled weather before emergence, but the day was made again by my taking another magnificent male *Charaxes hadriannus* on my bait. It looks as if I had struck a place near the food-plant, so I shall continue to bait it—it would be very satisfactory to get a female and I think I must try a banana brew in the same spot. It's always tricky stuff and often doesn't work at all, I think, in particular, it requires a hot, damp climate, since it is always most efficient at the coast, but seldom so in Uganda. But I will try, if only to see what spp. of *Euxanthie* are here, it's about the only method I know of luring them from the tree-tops!

Here's another interesting thing today—I got two *Liptena rubromaculata*, off exactly the same stem of that common palm-like *Aroid* and, having set them, it turns out that the original specimen was a female! Now, incredible though it may seem, I can come to no other conclusion, but that she was gravid, and that her scent still persisted at this spot after five days!, else why did I find these two males on the exact leaf on which I caught the female? You remember, I reported two on the 20th and that I had missed one. They were chasing each other and, I thought, fighting, but I feel sure now, the other was a male and that this was a preliminary to copulation. It seems extraordinary that scent could last so long, but it is difficult to explain the occurrence in any other way. Two other points; this is the first female I have seen; among all the long series from Katera there were none;—she has $\frac{3}{4}$ of both wings orange-red—and secondly this is a different race, the male has only two red spots in the discal band of the f.w. in la and lb. and is altogether much darker above and below.*

Later I got a female of my new purple *Abisara*, she is quite different from the male, having two blue bars on the f.w., the discal one of which is broad and turns the corner in a right-angle towards the base at the inner-margin, and two blue streaks on the h.w.†

Later again, I missed an interesting looking *Micropentila*, through falling flat on my face over a root, just as I had arrived within reach. I took about 2" of skin off my right-thigh and the language was superb, but unfortunately wasted on the air!!

Collecting here, is not without its' trials, apart from the "Laws of Chance" as above; the forest is full of blood-thirsty *Tabanids* and my legs and arms are covered with lumps like chicken's eggs, they seem extremely poisonous;—also there's a small black wasp which builds small carton-nests under leaves low-down along the paths, and if one brushes against one, they attack at once and have a very painful sting. But, who cares!

I took a fine *Ascalaphid* fly this morning; in my experience they are rare insects—this one has fine mottled wings and the last three or four segments of the abdomen below are shining white. Another ~~the~~ thing was an *Ichneumonid*, wings blue and transparent in alternate bars; abdomen, thorax and head orange red and an amazing ovipositor about 3" long. In your box I put another *Ichneumonid* which walks about

* Typical *Liptena rubromaculata rubromaculata* Hk. Sm.

† This was a mistake; it is the ♂ of *A. talanta caeca* Riley; the ♂ of *tantalus* Hew, is dull purple and was taken later.

on the tips of its' long legs, among and in exactly the same way as the common long legged *Muscid* flies one always finds on tree trunks—I feel sure there is something in the association, also in your box another *Syntomid* wasp mimic of a different sp. I will catch and include one or two of the *Ichneumonids*, which are very like these moths..

26/8: My boy not yet having turned up, I determined to knock off early and go in to Beni and send a wire, so I went and spent the morning amongst the pygmies, My previous displeasure has evidently had some effect, for I was left strictly alone. It may be merely, of course, that they have decided that I am obviously mad, so why worry any further!

The first event of the day occurred almost as soon as I got out of the car, when a fine fresh female of *Cymothæ reinholdi* came down and sat within 3 feet of me and I missed her!! Quite a new sp. to me. It seems to be an excellent area for *Cymothæ* for during the morning I took, *sangaris* female, *beckeri* female, *anitorgis* male, *lurida hesiodotus* male, and *ciceronis* male and female. Also along the "handaki" seems to be the haunt of the large *Epitola* and *Hewitsonia*, I saw many of both sexes, but only succeeded in catching one male *E. honorius* and one male *H. kirbyi intermedia*, as it was I had to get the former off the end of a 20 foot pole! But I shall concentrate on these from now on.

Nothing much to report today in the "other order" line, except a magnificent, little *Sesiid*, with black forewings and red hindwings, bordered with black. It is only about 5 m.m. across!

I started a local boy off on beetles, bugs, etc. today and his first effort is good, so in the end I ought to have a fine lot for Riley.

Then at about 1.30 I came back, to find that my boy had arrived, so now all is well, but since we wanted various stores, I went on into Beni and on the way looked in on the *hadrianus* place and sure enough I got another!

I was reading Arrow's account of the Coleoptera in the "Standard Natural History" (Pycraft)—incidentally it's a first class book for a collector on safari—and in the preface he says there are probably a million spp. of beetles, many of which are destined to become extinct, before they are known, owing to the destruction of forests throughout the world! It's an unpleasant thought and goes much further than the scientific point of view.

In a sense the Belgians, as holders of the vast majority of the central African forests, hold the destiny of Africa in their hands, since it is this large area of forest and the climate it produces, which holds the desert at bay. They are preserving large areas in the National Park, but, of course, this is infinitesimal and they are wading into the rest of it here around each village. It is difficult to see how else they could feed these hordes of natives without moving them altogether, but I hope they won't wade too far. Fortunately everything grows so luxuriantly, that food is cheap and the acreages required, therefore, not large, but the process is going on all the same. Is *homo sapiens* destined eventually to destroy himself and the world by unrestricted increase or will we learn sense one day and control our population?

There is still so much superstition in our make-up, that I fear the latter will take a long time, but the alternative is the destruction of the world. We then presumably grow our gills again and go back to the sea, until that also dries up or grow stone-crushers inside and live on sand!

I'm hoping for great things tomorrow, the weather is much better and there was more about today.

27/8: My hopes weren't exactly fulfilled—it was one of those tantalising days, when the sun was continually being obscured by cloud, so that it never got warm enough to wake things up—also I couldn't do anything right, I either missed everything or broke them in the net! The boy did better and got a new *Enryphene*, which I haven't had time to look up—It looks rather like female *E. cutteri*, but is a male and has very small apical bands—it's a fine thing with $\frac{2}{3}$ of both wings dark bronze green and an underside like *Euphadra medon*. As a matter of fact, (I had better own up to my idiocy!), I followed one for some time and eventually caught it and after glancing at the underside in the net, let it go, as just *medon* and of course, it opened its wings, and I immediately realised my mistake! It was one of those sort of days!, but it is on the other hand, another example of the value of protective resemblance. I caught 2 females of the second purple *Abisara* and a fine, freshly emerged female of *Hewitsonia boisduvalis* and bust them all in the net! But, later, managed to catch a male and female *Epitola*, which I think belong to each other and look like *carcina* in Seitz,* and a very nice little *Anthene*, which I don't know at all.† The boy got a fine male *Ps. ruhana*, very dark and with a much reduced postscial band.

I have added today another *Reduviid* to your *Lycid* group, a much finer species—also a long-legged weevil, which I found walking amongst the *Muscid* flies on a tree-trunk and I feel sure also belongs.

The beetle-boy is doing well, he brought in a lot including some fine *Erotylids*, but the best thing seen today was an astonishing *Membracid*, which I took in a dull moment; it not only has the usual horns, but a third, long one, emerges from between them and curves right over the dorsum, ending just above the last segment. From a lateral view it looks like a harp.

The *Lipteninae* are improving for apart from the *Epitola* seen or taken, the boy got an *Eresina* today and I a male and female *Liptena modesta*. I am conscious, that this is becoming very boring reading and is developing into a daily list of captures—it's rather like those shooting safari books, which consist only of how many elephants, rhinoceros, etc. the author shot each day, usually before breakfast,—and which I loathe! As I said, earlier, this is chiefly for my own amusement, but, I now realise that you'll have to read it, because all the notes regarding the mimicry groups, etc. are included in it! I'm afraid its' one of the penances attached to the post of Hope Professor! Anyway I'll shut up for today.

28/8: It was an interesting day in that in the evening, I was paid a visit by the Director of the Sydney Zoo, a man called Brown, of all extraordinary people to meet here! He is collecting animals, birds and reptiles for his Zoo. I have promised to try and get the locals to bring in birds and to forward them via the Doctor in Beni, who has been helping the expedition. Incidentally he has told me of a New Zealander who lives near Buta and collects butterflies and since this is the way I mean to go out, I shall go and see him.

Today's collecting (not before breakfast!) produced two new *Euryphene*, both of the interesting *Euphadra* association and both, I think, different to the species of yesterday. One is bronze-green, like that of yesterday, but is smaller and the apical band is also bronze-green, not yellow.* The other belongs to the *phantasia* group and is like a small *spatiosa*.†

* They were!

† *Anthene bipuncta* J. and T.

* *Euryphene chlæropis* B.B.

† *Euryphene flaminia* Stgr.

I did well with *Liptenines* also, a new *Pseuderesia*, a new male and female *Citrinophila*, and a new *Epitola*—also another *Liptena rubromaculata*, *mimacrae krausei*, *Epitola honorius* etc. I forgot to tell you yesterday that *Neaveia lambornii* turned up, the first I've seen since Budongo days. It was also a *Pseudacraea* day, I took two *Ps. ruhana*, missed one *dolomina*—I think *albostrata*, but more important still, I saw in one spot, *terra. hobleyi* and *schubotzoides*!! So, I do not think, as you said in your last letter, that the genus and *eurytus* in particular is rare in the Congo.

Unfortunately none of them came within reach, but you shall have them in time. I am looking out for *gottbergi*, which I took here before,—one perfect male,—and which, during the war, my boy took into his head to reset and, in the process, destroyed!! He did one or two other major errors, but, on the whole, set all the Bwamba stuff well. It was all due to not knowing just how wet to keep his relaxing tins and he erred always on the dry side and so broke wings occasionally. But I don't know how I would ever have got through the Bwamba and Amani collections without him.

There's a fine *Reduviid* in your box today, with its prey, an earwig. To facilitate finding these things in the box, I will always put prey under the mouth parts of the insect concerned.

I have seen various interesting Dipterous private affairs lately and I wish Edwards was still alive to tell him about them—one was a mass of *Culicines* copulating and feeding at the same time, on heads of a *Senecio*—another—today—a swarms of long-legged flies, probably *Muscids*, circling and dancing about a foot from the ground—the one sex, male?, has a white thorax, very conspicuous in flight and they look like *Hymenopteroids* until one handles them.

The beetle boy bought in, amongst a "soup" of spiders *Mantids* and immature *Aceridiids*, quite a fine collection, amongst them a magnificent beetle, which might be an *Erotylid* or a female *Scarabæid*, I don't know the Coleoptera well enough to tell, but judging by its highly polished dorsal regions, I incline to the former, on the other hand the thorax is greatly flattened and enlarged. It is black, with red thorax and red, lateral, patches on the elytra.* And so goodnight and to bed.—

29/8: A bad day—it rained all night and most of the morning and I went out at about 11 o'clock into a swamp! The sun didn't really come out at all, but I managed to find a fine female of the purple *Abisara*, *talantus* or whatever it is and a small *Anthene* new to me†.

Talking of the *Abisara*, I am inclined to think this sp. is *intermedia*, from the description in Seitz—it is strange that so far, the common black and white Uganda sp. *nevi* and the rarer *simulacris* seem to be absent. I cannot think that they are confined to Uganda, but it is just this sort of thing I am trying to find out. I have made complete distribution lists of everything in my collection and will now keep them up-to-date, but I'm afraid many common spp. went home to you, before I made the lists,—one day some industrious person can bring them to completion by going through the Hope collections.

The *Anthene* today is, I think, *lamprocles*. I spent most of the day collecting beetles, bugs, grasshoppers, etc., but did not get anything of special interest.

I hear there is a petrol shortage, which might completely upset my safari, as I wanted to go out via Stanleyville, Aba, Yei, Juba and then back into Uganda. It's rather bad luck that this particular period has concided with a tyre-shortage in Uganda and now petrol here—I gather also it's likely to last sometime. I have

* A stag-beetle (Lucanidae).

† *Neuryphegina lamprocles* Hew.

managed to buy a drum here, but that would not be enough and, in any case, I can't transport it. However, we'll see, I expect I shall be able to beg my way through—if necessary, I can wait for the shortage to be over in some good spot en route.

30/8: Again a terrible day, this is the sort of climate one associates with the Himalayas and such-like places, not Africa. As a matter of fact the proximity of Ruwenzori probably has a lot to do with it.

However one never knows and on the way home somewhat disconsolate, I caught a fine form of *curytus*.* Until I got home I thought it was a female of *gottbergi*, which it exactly mimics! You'll have to see this then when I get home. Also on the path I got another, new *Authene*, this time I think *leptines* and while I was searching tree trunks for beetles, I had the great good luck to find a *micropentila* just emerged from its' pupa, tho' I couldn't find the latter.

So, as I say, even a really dud day, like this one, sometimes comes up to scratch.

I did well also with beetles, some fine little *Curculionids*, *Cerambycids* in varicety, of which one more species went into your *Lycid* complex, and another is one of the largest I have ever seen, belonging to the first sub-family, whose name I forget. I also put a *Dipteron* among the *Lycids*, black body and wings and red thorax, I think it belongs, but am not sure.

One very interesting thing I found today when I was emptying the beetle-boy's tin, among which was this huge *Cerambycid*. In the cotton-wool was a strange, whitish brown looking thing, that looks like a sack with arms ending in a bulb from which small extensions emerge, like feet, but they do not appear to have joints or claws. There is nothing recognisable in it even under a fairly strong lens, nevertheless it looks like a very degenerate dipterous parasite and, if so it must have come off the *Cerambycid*!

It will be interesting to hear what Riley makes of it—The Provincial Commissioner paid me a visit today; I must say these people go out of their way to help and he called to "see that I had everything I wanted". I am ashamed of myself as usual, whenever I visit another country—like most of us, I cannot really speak French, whereas all, or nearly all, the Belgians speak English well. On the whole we're a very badly educated race, don't you think?

I think I was a little hasty about my remarks on the Kalinzu forest, for today I took one of the purple *Abisara* off the boards and it is obviously the Kalinzu species! Now this, with the *Acraea*, if it is really *kalinzu*, and the obvious race of *Cynthia indamora* makes three of the species from that area, which I had thought to be definitely endemic to it.* It may be that, on comparison all the Kalinzu forms will prove to be sub-species and that, therefore, the Kivu-Ruwenzori, Kalinzu area, has been longer isolated than Katera, Budongo, and the rest of Uganda, I am rather inclined to think that this will be the case.

Kalinzu is a strange and interesting area for on the one hand it is very close to Ruwenzori and one finds things like *Acraea johnstoni butleri*, *Mycalopsis matata* which are typical Ruwenzori spp. and on the other, it stretches almost down the escarpment to the shores of the Lake Edward, which, via the Semiliki, is no distance at all from the Ituri Forest and so from the Central African forests as a whole.

* *Ps. eurytus f. ruhamia* Hew.

* The *Acraea* was not *kalinzu* which remains endemic to the Kalinzu Forest, as does also the sub sp. of *Cy. indamora*.

I am quite certain that Kalinzu would repay the expense of a real survey, but the trouble is that it is hardly opened up at all. There are no tracks or roads through it, no paths even, since the local natives never go in, on account, I think, of the Chimpanzees. Probably they recognize their own remote ancestors!., but everyone is scared stiff of them. The forest goes down in steps from the fairly high altitude of Ankole, to the very-low one of Lake Edward and has, I'm sure, immense possibilities from an entomological point of view.

31/8: I had one hour's collecting today, after which a colossal thunder-storm descended on us and reduced the country to a shambles! I have now lit a fire and closed all the windows and doors; such is life in tropical Africa!

There is no doubt of the potentialities of this place, if only the weather would clear—in our brief period of semi-darkness we got an *Eresina*, another *Liptena rubromaculata*, *Liptena o-rubrum*, which I've looked at for many years in Seitz and hoped one day to find, and *Uranothauma poggei*. The latter seems to be the only one of the genus here, it is, in my experience a rare species, but I think there'll be remark under *poggei*?—that the figure marked *poggei* in plate 72 i, is either wrongly marked or a species unknown to him—it is actually rather a good plate of *antinorii*!

The *Cupido* (sens lat.), are conspicuous by their absence here—normal of course, for a forest area. A very interesting bug turned up today, a *Reduviid*, I presume; one of those strange *Mantis* mimics, but this one is even more strange in that it is procryptically coloured like lichen—I'll put it in your box—and, talking of lichen, I found yesterday an extraordinary cricket, long and flat, with long legs placed straight out fore and aft and antennæ about 2" long. It sits on lichen covered tree-trunks and is mottled and coloured exactly like the lichen—I'm afraid both it and the bug will lose their colour in the box, but you can imagine the pale green ground colour and the black speckles and mottling, being very hard to pick out among lichen.

I found also another of those little *Sesiids*, I mentioned the other day and put it among the *Lycids*, it might or might not belong, in flight it is of the same colouring—red and black—in any case it is a fine little insect and I'd like you to see it.

Well, we'll see what tomorrow brings forth, I should not be at all surprised if it snowed! Anyway, thank the Lord, I am not up on Ruwenzori, I often think Edwards, Taylor and I were extraordinarily lucky, when we were there, in that we scarcely had any rain at all—a very unusual occurrence on the range.

1/9: The dawn of September was one of the murkiest I have yet seen; by 11 o'clock it was just light enough to see! So I decided to go and drown my sorrows in a bottle of beer and some lunch at the Hotel—Madame, as one would expect, gives one an excellent lunch. Also I wanted a few stores and this, being a civilised country!, the shops open on Sunday for half the day for the convenience of travellers and for the natives, who, if at work, only get off on Sundays—no such thing, of course, in a British Colony!

So, off I went, did my shopping, had my very good lunch and then at 2 o'clock, for $\frac{1}{2}$ to $\frac{3}{4}$ hour only of sunlight, I went down one of the sawyer's path and saw more and did better than I think I have done in any one day since I arrived! Thereafter almost without warning the deluge descended once more and I got soaked to the skin! But in my $\frac{1}{2}$ hour, I took a perfect female of *Euryphene plistonax* one of the most difficult of all spp. in my experience to catch. She left the path immediately she saw me which is normal and I virtually gave up, but followed just on the chance and in a sunny patch in the forest, I got, her! Then appeared two females of *Euryphene rubrocostata*, I had rather suspected we had only seen males, so far and sure enough

the female is quite a different thing—unfortunately I missed the good specimen and got an old one, but it is enough to show. Instead of being green like the male, she is brown, the h.w. entirely so, the f.w. also, except at the base which is blue-green. The apical band is yellow as in the male, but much broader and the apex is broader white.

A fine male *Abisara rutherfordi*, another of my new *Euryphene* which I think must be Bakers' *chlaropsis*, but the descriptions of his four species aren't very good and there are no plates, two *Euphaedra zaddachi* seen for the first time, (and it is another of the Kalinzu spp.!, tho', of course, not endemic) etc. etc.—apart from these, there were many more butterflies, in general, about. My boy brought in a perfect male *Hewitsonia boisduvali*, another, *E. chlaropsis* and an *Eresina*—if only the sun would shine all would be well, but I am not complaining, since the Administrator has agreed to allow my boy to remain here for 12 months, so the final result should be good!

I hope to arrange that he can go on a bit further also and it has the advantage that he will get to know the chiefs etc. and I can then send him back, later on. It is extraordinary how susceptible some families are to cyanide—my bottle is far from strong, since it was made up before the war!, and is really only used as a receptacle, yet I have just put one of those powerful flying male *Lassiocampids* into it and it died instantly. An *Acraea* unpinched, would live, I should say $\frac{1}{2}$ hour, so would many beetles, there must be great differences in the tracheæ and general nervous systems in the different families, though I have never seen this particular point explained.

This morning I was paid a visit, by the Territorial Agent and his wife and two grand kids, one of whom had just come from having his tonsils removed! They are charming people. My friends from Kenya, if they are coming at all, should arrive shortly, one, Malcolm Berkley, is a collector, but it will be pleasant either way, to have some companions.

I took the new *eurytus* form off the boards today, it is an extraordinarily good mimic of *Ps. gottbergi* female and, therefore, of some of the Western *Bematistes*.

Strangely enough, the latter group has been conspicuous by its absence, in fact the first was caught today, a *B. tellus schubotzi*—this means nothing in a place like this and shortly, no doubt, they will be swarming. I am, however, interested, in that so far I have seen or taken the following forms of *eurytus*, *terra*, *trikensis*, *schubotzoides*, *hobleyi*, and this new one, besides *Ps. gottbergi*, so you will have to await results here, before completing your Presidential address! I will send everything as soon as I get back and the boys' captures as they arrive.

2/9: I went out today about 10 o'clock to the sawyer's paths and it turned out to be our first really fine day throughout, but just as I was going to write and tell you about it last night, up came M. le Commandant, or as they call him here the Kommandaa! He has large concessions about here and is responsible for the clearings for palm-oil and rice, where I went the other day. An interesting and very nice chap—regular Belgian army—and went with their troops through Juba and Gambela in co-operation with 2/6 K.A.R. during the advance. He stayed the night and gave me a lot of useful information.

The most notable capture yesterday was a strange large, dark blue insect with white apical bars which looked like an *Euphaedra*, but flopped along in front of me and then off into the forest. I followed and by great good luck caught it and it turns out to be *Melanitis ansorgei*! It is one of the most interesting butterflies

I've ever seen, dark blue with small white apical bars and the f.w.s. deeply emarginate and with black mealy spots. It must, I think, be a mimic of the blue *Euphadras*. I then got two fine females of *Euryphene rubrocostata*, which I described yesterday and others were *Deudorix nomenia*,* a new *Liptena*, an interesting *Dendorix* of the white underside group, resembling a *Hypolycaena* only this time, it is even better, since it has a long broad white tail on the h.w.s. like *angelita*, but is not that species. I think it is the female of *otreada*†, but Aurivillius scarcely mentions the tails in this group.

Apart from these we got masses of other good stuff, all, I think, mentioned before. One interesting beetle came my way, a small Elaterid, very unusually coloured, with red brown elytra and black head, which I took flying and I'm sure belongs to the Lycid group.

The boy brought in an insect, obviously collected dried and dead off a tree trunk. As first sight, I thought it was merely an ant, but on examination with a lens, it has two sharp horns on the thorax and, as well as the antennae, a long feeler from the top of the thorax, the pair of which has probably been broken off.

If it is not an ant, it is an extremely good mimic and, since I can't quite make it out, it is on the right hand side of Box No. 1 for diagnosis.

3/9: The Commandant left in the morning and it being very dull and trying to rain, I did not leave till 11.30.

First I took some Pygmie photos, as they had collected some "woad" and painted themselves for the purpose! I went down to their village to take them, a series of tiny beehive huts, roofed with banana leaves and right in the forest.

Then off collecting. The chief point of interest was that one of the yellow barred *Euphadras* made its appearance—I saw three and got one, they are lovely things and I've never seen them alive before—I think this one is *gausape*. Then late in the afternoon at the same time and place as before, I captured *eurytus opisthoxantha* and *e. schubotzoides*, but stupidly chased something else with the former in my hand and lost it in the bush! Later still and almost out in the open, on my way back to the car, my first *Papilio theorini*—an interesting species, with its strange *Acræa*-like underside. I have been looking at various brown *Euryphene* during the past few days and usually leaving them since they appeared from the undersides to be *lætitoides*. But in the process I noticed that some had a strong violet sheen, which I don't remember in the Budongo species and today, saw one basking, which seemed to be orange-red and so obviously so, that I decided it was time to catch a series and examine them. In the end I got 4 and 2 females, one of which I have seen about fairly often and taken to be a rather washed out female of *Euryphura plautilla*! But having got this one and examined it, it proves, definitely, similar and then set them; result, 2, as I say, very distinct females and at least 2, may be 3, distinct males,!! which shows how very careful one ought to be with these groups. I'll let you know, later, when they're off the boards what I make of them, but, in the meanwhile shall take every one I see.

Tomorrow, weather permitting, we shall have our first real day with banana bait, since it is now ready in sufficient quantities and we ought then to lure the rarer species out. I missed a *Diastogyna* today, which I think is *jacksoni*, it had that red underside, there is only one in the B.M., the type, and I have a paratype, so more must be found. Strangely enough the females seem commoner and I think there

* *Hypomyrina nomenia* Hew.

† *Hypokopelates otreada* Hew.

are 5 or 6 at the B.M. or in my collection; of the other new species from Katera, *chalybeata*, I think I got a very worn specimen early on here; a female *Epttola*, with the f.w. broadly white as in *batesi*, but which appears yellowish below, completed the day.

Yesterday, I watched the courtship of a batch of those long-legged, log-walking Muscid flies, one or two, of which, are in your box. First the males fight; they approach clasp interlock the prolegs and then butt each other with their heads. Sometimes both fall off the log, in which case the wings are used (which they are otherwise very rarely, incidently) and then one or both come back. The female in the meanwhile, merely waits and goes on feeding. However, when one decides he has won the day, he walks over the top of the female,—he is very much bigger and taller than she is—places his prolegs over hers' and his other legs at the sides and behind, so that she cannot escape and copulation takes place, he bending his abdomen, downwards beneath the tips of her wings to meet hers'.

4/9: It was a bloody day!! I'm sorry but that is the only adjective to describe it, rain all the morning and cold, damp, half sunlight in the afternoon, ending as usual in a fine evening, which is no use to anyone. It's really most demoralising and after a solid month of it one expects a break, but there is no such sign. A few *Lipteninae* woke up about 1 o'clock and I got 3 or 4 *Pseuderesia isca* and one male *Epttola carcina*, while the boy brought a male and female *Abisara rutherfordi*.

One interesting observation was made, however; on a patch of wet mud (it was all wet, but this seemed attractive!) were a few *Lycanids* feeding and among them an *Uranothauma poggei*, which I wanted. When I got close up, however, I saw that it was lying with wings open, on its back and obviously dead. This seemed very strange and I wondered why and since it seemed quite a good specimen, I picked it up. In doing so, I felt a slight pull and there, underneath, was a very unpleasant looking bug, which had eaten half the abdomen.

This is a new departure in butterfly predators, in my experience at least; it must have caught the butterfly when it was feeding on the sand, since it was quite fresh and relaxed, when I found it! I have put them both, side by side, in your box—you can't mistake them—the bug is a horrible mud-coloured thing with two large eyes placed wide apart above and on either side of the head on the edge of the carapace and obviously designed for seeing upwards and outwards and with single long, sharp claws to the feet for grasping.

The head is carried right under the carapace and in general it looks more like a spirulum tick than a bug! I think it has also a pair of smaller eyes on the top of the head. A very pleasant thing to meet, if one was about that size or smaller!, have you ever thought what life would have been like to a man living in the age of the Dinosaurs? Life in the insect world must be just about like that! That large handsome, highly, polished beetle I mentioned the other day is a female stag-bee, the boy, today, produced a fine male with fully developed horns, a smaller male and another female,—it's a very fine species. He also brought two *Cetoniids*, one a magnificent translucent bluish-green insect, which I have never seen before. They shall go to John Gedye at the Coryndon, who specialises in the *Cetoniinae*.

There are some fine *Cerambicids*, of the sub-family *Cerambicinae*, here, long bodies, long legs and long antennae and all magnificent iridescent colours. One is dark blue, and green with red legs and scarlet thorax and another bronze-green, with golden thorax. They all give off that strong scent, when caught, which is exactly the same to our scent senses as that of the *Ant Lions*. It is extraordinarily strong and persistent, even emerging strongly from the lid of a tin in which the insect has been killed and in my experience, is only produced by the bronzy *Cerambicinae* and

not at all by the *Lamiinae*. It should be an interesting substance from the chemical point of view, even, if only, from its most efficient spreading properties.

5/9: I had better refrain altogether from mentioning today in case the qualifying adjective gets out of hand!, suffice it to say that this time it rained *all* day and so I took my car into Beni and had the brakes re-lined. I also bought myself a box of cigars. So, that during these glooming days at home, I could at least, improve my cough and so do something useful! Contrary to expectation, they were not cheap, about 30/- for 50, whereas cigarettes are about half our price. On the way home at 4 p.m., more for exercise than anything else, I went down one of the saw paths,—nothing, not even a *Catuna*, but right on the edge, nearly back on the road, a female *Diestogyna* got up and looked a bit unusual to me, so I took it and it is one of those interesting “unmarried” females; *luteostriata-butleri* being the other one of this group. I do not believe, as is possible, with the latter, that this is a form of *ribensis*, it is much too different. So somewhere we must find the males and, after my experience with the two *Euryphene* groups, mentioned below, I am considerably shaken and shall catch and examine all males of *D. goniogramma* which is the common species of the *ribensis* group here.

Now, the *Euryphene*;—first there are the two spp. belonging to the *phantasia* group and secondly those like *lætitoides* which I discussed the other day. As regards the former, both have bronze green females (I cannot quite make up my mind as to the sexes, but that doesn't matter), which are alike except that one has a narrow yellow sub-apical bar enclosing two small spots of the ground colour and in the other this bar is bronze-green like the rest of the markings, but in the cell of the forewing, there are some, prominent black spots. In the other sex, males?, both are exactly alike, brown with yellow sub-apical bar and white apices—except, again, that in the first species, the yellow bar encloses two small spots of the ground colour. Another puzzling likeness is that in males, the sub-apical yellow bar is of exactly the same width, shape and extent and only differs in this character of enclosing in the one, two small spots of the ground colour.

Below, both spp. and both sexes are practically identical. So one had to decide, were they spp. or merely forms of each other? and then, suddenly, I saw the real point of difference. The clubs of the antennæ! In the female the first are white and the second black and in the males, both are white, but the first entirely so and the second only at the apical half!! So there is, no doubt about their specific rank, but their identity is a different matter. I thought I had sorted them out below, by the fact that the small white apical spot was broader in one species, than the other and then discovered that in one sex, the males (brown) they are exactly the same!.*

Then the *lætitoides* group; there are again two spp., the males differ only in the ground colour, above and below, one reddish, one dark brown above; one again dull reddish, the other greenish below, but the markings are almost identical on both surfaces.†

This is carrying protective resemblance to an almost unparalleled degree, since not only do the first two, in one sex, almost exactly resemble *Euphædra spatiosa* and female *E. medon*, but they are exactly like each other and similarly the *lætitoides* pair are confusingly like each other in the males and both resemble the commoner and larger *E. absolon*. The females of the latter are, of course, quite different and it is

* The “males” were *E. flaminia* Stgr. and *E. maximiana* Stgr., the “females” *E. chlorophis* B.B., (black-tipped antennæ), and *E. leptotopa* B.B. (yellow-tipped antennæ).

† That with female like *Euryphura* was *E. fulgurata* Auriv., the other *E. iturina* Karsch.

interesting that, if I am right in my diagnosis of the sexes in the former pair, and I think I am, then it is the males which have evolved the greatest degree of resemblance in this case. The explanation would be, of course, that the females have followed other models, in the first group the bronze-green *Euphadras* and in the second (a) others of the many females with sub-apical bars and (b) female forms of *Euryphura plautilla*. I am not boasting, in any way, when I say, that these two pairs would puzzle most entomologists, let alone the rest of "Homo sapiens", and so what hope has a bird?!!

Next to my *Lycanidae*, I have always been especially interested in the *Nymphaline* and have always systematically collected them, wherever, I have been and so studied them fairly well. Taking the *Euryphene*, *Diastogyna* and *Euphadra*, only, for the moment, though I believe other genera could be included, they conform to certain laws, one of which, in my opinion, is that, although almost always sexually dimorphic, they are seldom, if ever, polymorphic in any given area.

The plot thickens with regard to the *letitioides* *Euryphene* for today I took and set up 4 females of the latter type and there are two different forms, one brown with a white subapical bar, the other greenish with a yellow sub-apical bar! They are easy enough to separate and quite distinct.* The males are a different matter—I set 6 today and think I have sorted them, but the final decision and, also, as to which male belongs to which female, will have to wait until they come off the boards.

So there are now three spp., all exactly resembling each other below! the reddish male with its' very different *plautilla*-like female and these two above. The day started in great style, not a cloud in the sky and, I thought, now at last, here's a break—not a bit of it, at 11.30 a colossal thunderstorm broke over us, it rained solidly till 4 p.m. and I got soaked to the skin! But before this, with the help of lots of banana bait, I did quite well and amongst other things caught a female *Charaxes hadrianus*! It was great luck, she was obviously attracted by the bait, but wasn't on it and when I arrived got up off the ground before I had seen her and sat on a bush on the side of the track. I followed, but, in spite of careful searching couldn't see her at all, so I moved nearer and up she got and went off through the forest, which shows that this very conspicuous looking pattern, isn't a bit conspicuous in nature! I then gave her up, but through the belt of forest in that direction, I knew of a large clearing and it was just possible, she would settle in it, so I followed again and right at the end, on a low bush, there she was! The female differs only from the male in the larger spots of the forewing and in having much larger or thicker, sub-marginal lunules on the hindwing, its' a fine insect and a wonderful capture. On the banana bait I took a female *Euryphene* of another new species! She is larger than the others, with a broad, white apex and a white sub-apical bar tailing off into yellow towards the distal margin and below has a very large square white spot on the costa of the hindwing. The ground colour is mostly pale blue above and it is, altogether, a fine mimic of the blue *Euphadra*. It might be *phranza*. I got also, two more *Melanitis ansorgei*, a fine male *H. boisduvali*, a male *Liptena o-rubrum* and all those *letitioides* *Euryphene*, so the two hours, I was allowed, produced good results and it was worth a ducking!

Another new beetle was added to the *Lycid* group; again, I am uncertain of the family, also a small Cerambycid of, I think, a new species. It is growing and should make a good exhibit. No wasps as yet, nor have I seen another of that fine *Asilid*.

* Two species may be involved, but at the moment both are placed to *E. letitioides* J. and T.

7/9: Yesterday about 4 p.m., just as I was getting down to sorting the days catch a party of Kitale people arrived!, and persuaded me to go back and dine with them at the Hotel, so I just had time to set a few special things and then off I went. It was quite a memorable day, though again I got wet through. I think the best thing I got was *Euryphene symphona*, its' a most immaculate insect, in that all the markings are so neat and precise and also one of the most interesting, I have seen; above an exact mimic of the blue *Euphadras*, particularly of *E. (xpete) cyanea*, which it also mimics below. The underside is lovely, a sort of mahogany colour, with crimson costa and a pale blue green spot below and round jet-black spots in the cell. Others were *Diestogyna gambiae*, new to me, a fine male *E. plistonax* and quite a lot more of the *phantasia* group *Euryphenes*, among the latter is a much larger species and a single female belonging to something else, but I will wait till they're off the boards, with some more I got today before discussing them. One however, must be mentioned,—you remember the two of this group I discussed before and was finally certain I had found the right pairs, well I was wrong, for yesterday I got a female of the all bronze one, which now turns out to be of male. The one pair are alright, male brown, female bronze,* both yellow-barred and with white antennal clubs. There remains the other male, also brown with half-white antennal clubs and with also, a yellow, sub-apical bar, but not enclosing any spots of the ground colour and he, so far, is without a mate. The bronze species, of which I got the female yesterday, both have black antennal clubs,* and it just shows that my second law, i.e. that the markings in the two sexes must be exactly the same, or they don't belong to each other, is correct and I should have been suspicious of the difference in the antennæ. This new female is quite a different looking insect to the male in colour and size, but she agrees exactly in marking and antennæ.

There was such a rush yesterday that I don't remember much more about it except that another *Reduviid* went into your box, with its prey and a small borer beetle, not a *Bostrichid*, however.

8/9: Apart from a shower at midday, it was fine throughout and, for once I am properly tired! I am beginning to wonder whether practically all the west African insects do not occur here in their proper times and seasons,! for today 3 more turned up, *Euphadra themis*, probably *vetusta*, *Euryphene phranza*, a very fine thing with its large snow-white spot below, and *Diestogyna lysandra*. Then I had the great luck to take a male and female *Ps. dolomena*, which I think belong to the typical race,—the male had to be caught on the end of a 20 ft. pole!—and yesterday, by the way, a bad specimen of *Ps. clarki*. So the *Pseudocraea*s are all here. *Ps. eurytus striata* will, I'm sure, turn up, I think I saw it today†, and, as I said earlier, I know *Ps. gottbergi* occurs.

Finally a new *Liptena*, *L. fatima*, an interesting species with the Pierid reddish yellow basal costal patch below like *Citrinophila erastus*, which it is extraordinarily like on the wing.

I put another beetle, very good mimic this time, and another *Cerambycid* among your *Lycids* today and nearly filled a tin for the B.M.! Some grand things, among them two of those *Cerambycid* wasp mimics, bronze with red-legs, and a very large *Pentatomid*, which I tipped out of the boys tin onto the table and the room still smells of bug! One other thing occurred today—the banana patches are always covered with those fierce little black wasps, but, if one puts a net over them to catch a butterfly, they don't seem to mind and merely fly away when released. Today,

* *E. phantasia* Hew perhaps, but I do not think I was right.

* *E. chilgropis* B.B.

† It did not!, nor does it occur so far east.

however, I took it into my head to stir up one patch, so I took a stick and started,—immediately I was covered with them attacking in force, and stung all over, face, neck, arms, legs, an extremely painful proceeding and I shall not be stirring any more bait in future!! And so goodnight.

8/9: I've been suffering today from my encounter with the wasps, they're evidently extremely poisonous, since both hands have been like footballs all day and irritating and burning like hell! Apart from that it has a mild sort of reaction and so I came home a bit early, before, in fact, the banana bait was at its best, which is between 2 and 3 p.m.—so my efforts, as far as *Nyphalinae* were concerned, weren't very great. The boy, however, had a gala day and though nothing new turned up he got lot of good things, including another *Euryphene phranza* male and another *Charaxes hadrianus*. It was also a *Pseudacræa* day, for the boy got a fine female of that new *eurytus* form and I, another *dolomene* and a fine form of what I have been calling *ruhama*. Since this one has a broad orange bar on the f.w. and looked very different, I examined the others and none of them are *ruhama*! for all lack spots in the cell of the f.w. above and below and have instead a thick black streak like *gottbergi*. They vary a lot as to the formation of the f.w. bar, but according to Seitz, cannot be anything else but forms of *gottbergi*; on the other hand the original specimen I got near Irumu, and which the boy destroyed, agreed with the figure in Seitz, and these do not. Secondly, my new form of *eurytus* is, as I said, extremely like the female of *ruhama* and the females of *gottbergi*—it has the spots in the cell of the f.w. below—it might easily be the female of *ruhama*, but I do not think so, and I feel confident it is *eurytus*.*

Today, I watched two interesting laying operations—first a female of *Pseudacræa boisduvali*, which was laying on a sapling about 10 ft. high—the fact that it was so low down, and that it was in dense shade are both interesting points—I believe most species lay low down in a forest, and so escape some of the attentions of birds which are usually prone to keep in the sunlight of the canopy. The eggs are laid on the underside of the leaves, which is quite an undertaking for a big heavy butterfly, such as this—she would investigate a leaf carefully, and then reverse and flop underneath. There's no other word to describe it; often she made two or three attempts before getting herself in the right position. I thought how extraordinarily vulnerable she was all the time, should a bird have been watching. Mark you, throughout, the *Acraea*-like pattern was ostentatiously exposed. The eggs are very large, half as large again as those of a *Charaxes*, rather shallowly domed and with a broad flat base. They are yellowish white and covered with a sticky secretion, when freshly laid. Then just opposite on a tree-trunk with a slender creeper climbing up it, was a female of *Precis westermanni*, also laying, and, out of 4 eggs I saw laid, only one was placed on the creeper, the other three being laid among moss on the bark of the tree! So the young larva has to find its way and a fairly long way for so minute a thing, to its food. On the other hand I suppose the egg is safe from parasites among the moss.

It is strange how spp. suddenly appear in a big forest like this, obviously freshly emerged and then as suddenly disappear. Either they disperse or the struggle for existence is very severe and life is short. I rather incline to the latter view, since occasionally one recognises a certain insect in the same place, say with a tear in its wings, day after day, especially where there is bait, but the majority are there one day and gone the next. I saw three fresh *Euphadra gausape*, that day, when I reported catching one and not one since and there are many similar cases, but no doubt both reasons are involved.

* The original specimens were all forms of *Ps. gottbergi* Dew. and the "new" one was *Ps. eurytus* f. *ruhama* Hew. female.

10/9: A bad day!—it threatened heavy rain since early and since the track is so wet these days that I have to leave my car a long way off, which means a certain ducking if it rains, I decided to give it a miss. At about 11.30 a.m. I went along to one of the sawyers paths and took a fine male *Melanitis ansorgei* and, incidentally, the first specimen of *Euryphene mardania*, I've seen here, so far. The former, i.e. the *Melanitis*, suddenly seems to be common here, or may be it finds banana irresistible!, but, either way, we have captured 8 or 9 recently. The female is also plain dark blue with whitish apical band, but is a little paler. The boy found on his bait a female of *Cymoithæ bonnyi*,* rather worn and old, but sufficiently good to show it is a fine species. An *Asilid* with its' prey, a small, very hard, *Bostrichid* beetle, started off your second tin today.

Before going out today I examined the *latitioides* group, now set up, and I cannot separate them at all, nor can I separate the females below, although above they are quite different and, when you see them, I'm sure you'll agree, look distinct spp. Of course I may still lack one male. Anyway the investigation proved the separate identity of the reddish brown species with the *plautilla* like female, which is one good result. Another form requiring investigation is *micans*, of *E. absolon*. I have seen it here, but I've also seen and caught several typical *absolon* and, on my theory, I strongly doubt if *micans* with its' strong purple sheen, can be a form of *absolon* occurring with it in the same place. I think it will undoubtedly prove to be a distinct species. I'm still enduring intense irritation from the wasp stings—all insect bites, with the exception, strangely enough, of mosquitos, have this poisonous effect on me and I wish I knew of an antidote—most people, except when young, seem to be more or less impervious to them!

Another *eurytus schubotzoides* today and several more *tirikensis* have turned up. I haven't seen *obscura* yet, but I should think its' counterpart is this new form mimicing the West African *Bematistes* spp. So far all forms are here, with the above exception, in about equal proportions, but its' much too soon to judge.

11/9: My first really strenuous day and by all counts the best!—I did not stop collecting till after 4 p.m. and the boy arrived back just before me and between us there are some lovely things. The new spp. are *Cymoithæ reinholdi*, 2 males; *Diestogyna melanops* again 2 males and two more interesting looking members of my *phantasia* group *Euryphene*; more about these when they're set. Besides the latter two, quite a lot more, of those we had before, some of which I haven't yet worked out. I had been expecting *Euxanthe trajanus* on the bananas and it turned up today and in the same place, as I caught mine, the boy got 2 more perfect males *Charaxes hadrianus*. That is now 5 miles from the same spot, with one male and the female elsewhere—one would expect the females to disperse and try and colonise other parts of the forest, but this is a case of my "island" idea.

We took masses more, but I will not bore you with them—two *Pseudacraeas*, however, must be mentioned. First a perfect male *Ps. clarki* and second—I think the best capture of the day—a form of these *Ps. gottbergi* (or whatever they are) or may be a new species. The following is similar to the others with a narrow yellowish median band, but the hindwing has a white median band! Apart from that there are strange black patches filling most of the cell of the hindwings—it's a grand form and one of the most exciting things, I have caught so far.* Mention must be made of the first male *Cynadra opis*, common I know, but the loveliest of all African butterflies and I defy anyone to dispute it!!

* *Cy. infuscata* J. and T.

* A form of *Ps. gottbergi* Dew.

I had more to set to night than the boards would hold, so have not even sorted the beetles, bugs etc. and cannot tell you about them. I had a fine view today of some of those minute flies being fed by *ants*. The association was (1) frog-hoppers on the end of a stem, (2) minute ants tickling them and apparently feeding from the mouth of the frog-hopper, not, be in noted, from the anus! and (3) these minute *Dipterons* hovering over all and I think tickling the ants with their forelegs and being fed by them. At all events every now and then an ant would raise its head towards a fly, but both are so small that it was difficult to see. I will try and collect a few of each, but they are so minute, it is difficult.

It is now raining hard, but, temporarily, I don't mind!!

12/9: I have placed in a test-tube in your box No. 2 a few each of the frog-hopper ant and *dipteron* association between two wads of cotton wool, they should, I think, travel alright like that. Also next the large *Asilid* with prey are two small beetles and the affair is this; there's a large tree felled across a clearing, quite severed and dead, but with the one end still resting on the butt, about 4 ft. from the ground. It was a good beetle collecting spot and as I visited it day by day I saw a lot of other things Hymenoptera, Diptera, etc. and so investigated as to what they were all doing. It turned out that these small beetles bore small holes just inside the bark, in which they sit, with the anal shield just exactly blocking the exit of the hole like a stopper. And from the edges of the holes sap is oozing and attracting a whole host of other insects. I made quite sure that they were not feeding from the anus of the beetles—in every case it is from the edges of the holes. There was no point I felt in collecting and sending you all these things, it seemed merely necessary to record them and the list includes; many other beetles, including *Curulionids*, *Buprestids*, *Brentiids*, *Elaterids* and others, several *Ichneumon*s, the small black wasp which was the cause of my downfall the other day, several spp. of ants, many flies, a female *Charaxes etheocles* form *carpenteri*, which I caught, and finally a large slug, which was travelling from hole to hole today! It seems almost incredible that such large things as a *Charaxes* and a slug should have been attracted by such minute quantities of sap, and the case struck me as just worth recording.

I wasn't very successful today. I ruined it as a day, by loosing a fine specimen of the rare *Euryphene*, I should think it is *nivaria**—distal half of wings dark green, basal half light green, and apparently no white apices. Its' a most tricky thing, I've seen it twice before and its always off like a flash, but today there was one on some banana quietly feeding and by being too long about it, I lost it. I have been waiting for it, since I saw the first one nearly a month ago and was duly disappointed at missing this one. Although I did not scare it by having a shot, yet, as is the habit of the beast, it never came back. Apart from that there was little or nothing about in my part of the forest and another female *Diestogyna lysandra* was the only notable thing I took. The boy, however, 7 or 8 miles away in the saw-paths, did better and brought nearly as large a collection as yesterday including, *Euxanthe trajanus*, female; *Ch. hadrianus*, 2 males; *Euphadra themis* male and female; *Diestogyna gambie* female; *Euphadra imitans* male, and another of the brown *Pseudacraa gottbergi*.

I am rather looking forward to moving on, a little further, I have been here nearly a month, which is enough for one safari and, in any case, the boy remains behind, so I am hoping my friends will soon arrive or let me know that they are not coming. They are rather more than due.

19/9: There is nothing to report today—I didn't get wet through because I sat under a tree, but I had to sit there for about 3 hours and my temper was shocking at the end of it!

* This was correct; *E. nivaria* Ward,

In the evening, however, my friend, E. J. Tyack, from Kenya, arrived, so now all is well, and we can move out of this permanent watering-can as soon as we like! He brought me mail and amongst them was one very welcome letter from you, but I shall wait till, I'm back in Uganda, before I answer, as mails seem very uncertain from here.

14/9: My friend has brought me luck, for today, has been one of my best. I must, I'm afraid, give you the list, it was so especially good. Far and away first on the list comes a fine specimen of female *Cymothæ reinholdi* and I now know that it is *reinholdi* and not *hyarbita*, since it has the red transverse line on the hindwing beneath. It is a very interesting thing very like *Amauris niavius* and some of the female *Bematistes* on the wing. Nearly equal with that, was a female *Epitola honorius*, again an amazing thing, with its broad white *Bematistes*-like post-discal bar. This bar is quite unlike that of any other *Epitola* I know and is dead white. A female of *Euryphene phranza* was the next new thing, again a fine mimic of *Euphaedra spatiosa*—really, these *Euryphene*, in both sexes with their *Euphaedra* models would make a fine exhibit—this is a most unusual form of female for one of the *iturina* group. A female of *Diestogyna gambiæ*, another female *Charaxes hadrianus*, another of the *Phantasia Euryphenes*—I suspect, again a new species!, 2 more *Ps. gottbergi*, and another *Ps. clarki*, male and female *Euryphene plistonax*, 3 females *Cymothæ diphyia* and the boy got a female *Cy. anitorgis*, besides masses more of lesser importance—it was a wonderful day.

Finally a very unusual and interesting beetle went into your box. It is a large *Elaterid*, which I caught flying; to start with this is unusual for the family by day, but what is much more unusual is that it exposes in flight a large red abdomen!, very much like one of the large *Coreid* bugs commonly seen flying in the clearings here. I will include one of the latter with it. When I caught it I thought I had the bug!

15/9: Another quite good day as far as weather goes and, though it did not produce the rarities of yesterday, many good things were taken. It is rather extraordinary that *Euphaedra imitans*, one of which, I got today, and which I have also from Kalinzu and Bwamba, recorded in Seitz, only from Ogowe, should be the one of its group here, whereas *E. eusemoides*, a Congo species, I have never even seen. Another *Ps. gottbergi* and *Ps. eurytus hobleyi* will please you, but the thing that pleased me most was yet another member of the *Euryphene phantasia* group! Having little to set since my box is nearly full, I thought I would get down to these and the results are rather surprising, I did it properly this time and first sorted out the sexes by examining the fore-legs.

First then there is the bronze green species, female larger and with white sub-apical bar, one of Baker's species, probably *chlaropsis*—then a small species sexes alike except that the female forewing is falcate and slightly larger, I think certainly *E. flaminia*. Then the two I was so sure about! One bronze-green, the other brown, both with narrow yellow sub-apical bars enclosing two spots distally, of the ground colour, are both males, and belong respectively, I think, to two much larger insects one brown, one blue, of which I have set quite a lot and all of which, turn out to be females. Both these two spp. have white-tipped antennæ, or perhaps I should say yellow, and the brown female is almost as large as *E. spatiosa* and a perfect mimic. This should be *maximiana*, but, if so, the male does not belong and I have not yet got it.

The new one today has no white apex, has black-tipped antennæ and is either *nivaria* or a new species. The bronze male with the yellow sub-apical bar, with its blue and white female is probably another of Baker's spp. and finally I have a fifth

species small, bronze in the one sex and brown in the other with a thin indefinite white sub-apical bar in both sexes, and I expect this is yet another of Bakers. So you see my perplexity was justified and there is still the one I missed the other day to come! I suspect that, although green, most of Baker's spp. belong to the *phantasia* group.

A fine collection of beetles today, particularly *Cerambycids*, but not of particular biological interest.

Finally we received a visit from the Manager of the Hotel with his wife and daughter and the Manager of the big S.H.U.N. Co. to see the butterflies—they are very nice people and it was kind of them to come. I propose to move on to Putnams Camp on Friday.

16/9: I took off the board today a fine female form of *Cymothæ anitorgis*, with red forewing inner-marginal spot and yellow hindwing bar—the latter usually being white. This must have been the "Form of *dolomena*", I saw and failed to catch early on in this safari. It might be a new species, but I don't think so, as it agrees below and has the large square white spot on the h.w. costa. I think there'll be a point of nomenclature cropping up here for *aramis* was presumably described from a female, which according to Seitz is the red marked one. The latter, however, is the female of *anitorgis*, as figured and described in Seitz and the smaller orange species with rounded wings, which I have always called *aramis* has a black and white female, also with rounded wings.* I had some more luck today in that both the boy and I caught one each of the *Euryphene* I have seen several times and never succeeded in capturing—with the dark green distal half to the wings below. Both were old and worn, but it is, I think *E. phantasiella*.† I also caught another fine *Euryphene symphona*. *Pseudacraea*, again, were in evidence—one *eurytus terra*, 2 *clarki*, 2 *gottbergi*, one of the latter having the white-barred hindwing and the other more interesting still since the hindwing is only white-barred below and yellow on top! Several *Bematistes* also have been arriving—*epæa*, female *alcina*, etc.

To your box I added one of those magnificent *Longicorns*, blue black with red legs, like the big wasp.

It is very satisfactory that with this *Euryphene* today, I have now captured some of everything I have seen and there are no outstandings, so I can leave with a clear conscience! It has been an amazing place for the genus *Euryphene*, which has far and away outstripped the others.

17/9: Today was dull and cloudy ending in a thunderstorm and apart from *Charaxes hadrianus*, which continues to turn up,—we got no less than 4 today—there was nothing interesting in the butterfly line. I spent a rather tiring day wandering about collecting bugs, beetles, etc. of which I got a lot. A nice *Cerambycid* mimicing a large and common weevil, both with diagonal pale yellow pattern, a *Reduviid* with prey, this time a *Lymantrid* caterpillar, and a large black *Asilid* with red legs to go with the wasp and a *Longicorn* went into your box.

I saw a very interesting spider's web today, it builds a fine mesh circular web and in the centre is a circle about $\frac{1}{4}$ " diameter, followed by two further narrow rings all filled in with opaque silk. It is placed at a slight angle from the vertical and the spider sits beneath behind its camouflage screen or above, blending with it.

* The red and yellow and the red and white females belong to *aramis* Hew; *anitorgis* Hew. has a black and white females similar to *sangaris* Godt and the smaller orange species is *regina-elizabethæ* Holl.

† It was *E. nivaria* Ward, as previously thought.

In passing one of my patches of banana bait, I noticed a large brown looking lump on the edge of it, which turned out to be a very prettily marked toad. It was engaged, if you please, in systematically clearing the patch of those very fierce little black wasps and apart, from occasional convulsive gulps, didn't seem to be suffering any ill-effects—I watched with admiration and passed on hoping it would eat a lot!

The Doctor came out from Beni today to inoculate the whole population for plague, which he did from our verandah—a seething mob of thousands of natives all day long and I was glad to escape to the forest. Apparently they have had quite a few cases in Beni. The local tribe is not very prepossessing, primitive and very unwashed!

18/9: I have nothing to report today—we went into Beni and fixed up everything to go on, but in any case it was dull and rained before midday. I have been getting one or two lately of what might be *Euphedra franchina*,* though this one lacks the black spot in the cell of the hind-wing and has a white costal streak below like *preussi*. Its rather a fine combination of colours.

Tomorrow will be the last collecting day here though we have to go again into Beni in the afternoon to get my friends' car, which is undergoing repairs—in spite of the weather, I have no complaints about the final results, some really fine things have turned up.

The other day when my friend arrived, he brought me a cutting of your letter to the Field about the Marsabit butterfly trap—I wonder what answer you got.

22/9: The last, few days were spent in travelling and in competing with various serious complaints of my friend's car—I doubt if he'll be able to go on, which rather upsets the safari.

We are now at Epulu at Putnam's Camp, where, before the war, an American used to live and which is now a Rest Camp. It is a lovely spot, right in the forest and built on the edge of the Ituri River. Furnished and very comfortable and costs one 40 Francs a day. Having been beautiful weather all the time we've been travelling it is now pouring with rain. Such is the cussedness of things, I begin to long for Somaliland, where it never rains!

The only interesting thing I have to report is that last night I caught another of those huge *Cerambycids* and killed it in a killing bottle—this morning in the bottle, as well as the beetle were 3 small *Chernetids*!, so I examined the beetle and under the wings are a lot more!—It seems an extraordinary association and I wonder if it has been recorded before. Are they parasitic? (I did not know that any of the family were) or are they using the beetle merely as transport? I shall send them to the B.M. with a note enclosed. I don't know if this is the sort of thing you like at Oxford, but if so, I feel sure Riley would hand them over.

Later today. Would you believe it?, but in spite of almost continuous rain for 24 hours, I have had the second great thrill, of the safari. For about ½ hour at midday the rain let up and I went out with a net, only just outside the house and there feeding on some fallen guavas was a perfect female *Charaxes nobilis*—it might even be *superbus*, since it differs a good deal from my remembrance of the male from from Kalinzu, but the descriptions of the two are so similar, that I shall have to compare them first at home. But isn't it a great piece of luck? I got also a male of another *Euryphene*, probably *latitia*.

* *E. zampa* Westw.

23/9: I had a chance to see what was here today, since the rain stopped and it was quite interesting. Many things as at Beni, but some definitely new, showing the trend towards West Africa. Such were *E. latitia*, of which I got both male and female*, also *Euryphene comus*, an insect I had always wanted to see. It has a very unusual and finely marked underside. One or two new *Euphadra*, also, and several spp. of *Neurelipes* or *Triclina*; *lamias*, but with quite a different underside *makala*, I think, *levis*, probably typical, and one or two others. Lastly I got two of that fine *Deudorix schultzei*† (frons, black with white lateral margins) one of the finest of the blue one I've so far seen, Guava bait seemed to work fairly, well—its extraordinary how with some fruit bait, an apparently completely untenanted forest becomes alive.

24/9: I do not think I shall stay here very long, the forest is not really opened up at all and although one gets some very nice things daily, there isn't sufficient scope. I took the first *Euptera*, I've seen, today, a female *E. hirundo* with pale orange bars, also a female *Euryphura ochreata* and a *Euryphene* female similar to *ikelemba*, but not that species.* By the way in the last few days account read *severini* for *latitia*—it is the one with the reddish underside.

No *Pseudacraea*s have turned up here, but, as I say, there are no open places to bring them down. Also for same reason, beetles, etc. are scarce. But it is, all the same, an extremely pretty place.

I spent some time today photographing pygmies for which they got a few handfuls of salt and were delighted!

29/9: Among a good collection today was one really exciting thing—a male *Euptera*, but like no species, I know, nor like anything described in Seitz. Forewing black with whitish rays, rather after the fashion of *dolomena albostrigata*, hindwing black bordered, but the central area pale yellow and base back, spotted. Body white spots and end of abdomen yellow tipped for at least 3 segs.

Below distally black-grey heavily streaked with white and best of all, the base of the hindwing bears a perfect brown *Acraea*-like aposeme, sharply defined and spotted with black! In shape it looks like a tiny *Pseudacraea*, but with the yellow-tipped abdomen, I think must be *Euptera*.† Another thing was a *Diestogyna camarensis* and yet another, a very worn male of *Euryphene staudingeri*, as well as three *Euphadra* new to me, but which I haven't worked out. There is no doubt of the richness of the fauna here and one would do very well, if it was slightly more cleared. I shall stay anyway another two or three days.

The forest is full of an enormous *Cicada*, which sings almost like a bird and tremendously loud, but so far I've failed to catch any.

26/9: The weather is better here—each day from about 12 o'clock onwards at least is reasonably fine so one always does fairly well by the end of the day. My first *Pseudathlyna* turned up, just *plutonica*, I think, but its always a nice thing to get and a new female of the *Cymothæ reinholdi* group, also, which I cannot quite decide upon.

* *Euryphene severini* Auriv.

† *Hypokopelates makala* B.B.

* *E. ikelemba* Auriv, the only specimen seen or taken.

† *Euptera mirifica* H. Carp. and Jackson, recently described.

‡ *Cymothæ staudingeri* Auriv.

Again, the first *Pseudacraea* today, *Ps. eurytus opisthoxantha*, so we come still further West with the Uganda forms, or, at least, with one of them, and I expect others are also present. It was interesting that the *Cymotha* mentioned earlier completely took me in, I thought at first it was *Hypolimnas anthedon*, then that it might be *Ps. eurytus tirikensis* and was only mildly interested in its capture!

Another interesting thing was a *Lycanid*, which is, maybe, one of those rather obscure *Cupidesthes*—it is white below with a few anal spots, suggestive of *Anthene* and plain smoky brown above. It was behaving and looking exactly like *Liptena ilma*, and that typical dancing flight, alternately showing the dark upperside and the silvery white underside. I took two in the same place.*

Once again today I found a case of the *Homopteron*—ant-fly association—the fly looks the same, but the ant is quite different and the bug is, I think a *Coccid*, I will collect them tomorrow.

The Pygmie village has decamped lock, stock and barrel; I suspect they thought my piles of banana bait were potent medicine which would undoubtedly poison them! Nothing more to tell you tonight. We have a Belgian biologist staying here and between writing bits of this, he, also, writing up his notes, we are having long discussions on all the various insects coming in to the light!! He is engaged on a survey of all the Research stations in the Congo and Uganda and is then attending a big conference in Accra.

27/9: Our last day here—rather spoilt by a mild thunderstorm at about midday, but, before that, I got a male and a damaged female of *Euphædra adonina*, it is a fine thing and I cannot believe it can be a form of *themis*. I should very much like to get my boy here to collect these *Euphædra* in quantity, since I have taken at least five different ones of this group, all, of course, in ones and twos. *Adonina* was the only thing of special importance taken in the forest today; I collected the ants, flies and coccids and placed them in the same tube in your tin on top of the other lot. During the afternoon, however the sun came out again and I got a female of *Charaxes nichetes* under the guava tree, so that is two outstanding captures just outside the door of the house! One nice species I forget to mention the other day was *Pap. illyris*, of which I got one on a patch of damp sand.

We leave tomorrow and I'm sorry to go,—but I intend to come back some day. I doubt if there'll be much more collecting until we get north of Stanleyville, where I hope to stay awhile on the Aruwimi River.

28/9: *Bafwasende*. We drove through magnificent forest all day, 120 miles, this is indeed a wonderful country. Shortly after leaving Epulu I suddenly saw a huge male *Pap. antimachus* sailing slowly down the middle of the road! A quick stop, hurried search for and erection of the net—a much too hasty attempt to catch it, as usual, and off it went at about 40 m.p.h. into the forest!! But, I will say that, really, I don't mind, since it was such a marvellous sight. Later in the day, I saw another, but much too high—I should say it's a fairly common insect here. By way of compensation, just after missing my *antimachus*, a *Ps. gottbergi* came and sat on the car and I got it! This is a pretty place, beautifully laid out with grass lawns and palm trees, typical of tropical Africa. It's a small administrative centre with very good buildings and a stone rest camp which we are occupying.

We crossed the Ituri River en route, just after Nia-Nia, I think the biggest river I've ever seen, about 500 yards across!, but it has a fine iron motor-ferry and one is over in no time at all. Tomorrow if all goes well we reach Stanleyville where the Congo will dwarf the Ituri, I suppose!

* *Cupidesthes thyrsis* Hew.

29/9-7/10: A "*Shaitani*" has been busy with us since I wrote last—one thing after another! Our last petrol point was out of petrol and we ran out 40 miles from Stanleyville and had to spend a night at a Rest Camp, take a lift in and come out again and salvage the cars—then no room in the hotels—eventually one very dirty one between us for two days, then a holocaust of trouble with my friend's car and finally he poisoned himself somehow and spent two days in bed! We left eventually at 3 o'clock today and arrived at a small place called Bengamisa on the Buta road for the night, two more ferries en route, making now the 7th since crossing the frontier and all of them larger than any river in Kenya! Stanleyville is a pleasant and extremely pretty little town and there are some very good hotels, into one of which we eventually were admitted. The river is magnificent, about 800 yards across and the Stanley Falls on the Chopi just outside are a fine sight. I met some of the entomologists, medical and commercial and compared notes.

This is all *Simulium* country and they make collecting most unpleasant, so I am not sure if I'll stay at Banalia after all—we may, however, be out of them by then.

Amauris vashti seems common along the road here and I saw one *Pap. zalmoxis*.

9/10 KOLE: This place although at least 350 miles further West of Epulu, seems to be almost exactly the same! I only took one different species this morning, a large white Satyrid.* Although disappointing, this is, also, most interesting from a distributional point of view and means we'll get a fair sample of the central Congo forest fauna from Beni and Epulu. As a matter of fact I saw more spp. at Epulu than here, though, of course, one day in one place, isn't any criterion. Nevertheless that all of the many seen here were also seen at Epulu or Beni is significant.

11/10 YPOLE: There was nothing interesting enough to keep us in Kole or rather at Toya, about 12 miles off the road where we stayed, so yesterday we came through here past Buta, altogether about 130 miles, on the way we passed through some really wonderful forest and I wish I had had the luck to hear of it before we stopped at Kole. We stopped for about 20 mins. and I caught *Euryplura porphyron*, *Charaxes laodice* and some nice *Euphyedra*. No-one could give us any information about Rest Camps in the forest at Buta so we just came on and asked as we went along—the result seems promising, although it is nothing like the Buta forest. The policy here is ribbon development along the roads with the result that for a mile or so on each side the forest has been cleared with the exception of odd bits of Forest Reserve and here is no exception. However, I explored paths with a guide this morning and found two fairly large patches of forest and baited one with banana. It was an impossible day, heavy cloud dark and cold, but, nevertheless, I got some good things—one new *Euryphene*, probably *laticia* male, *Anthene lucetilis* which has always intrigued me in Seitz, 2 females of the *phantasia* group *Euryphene*, with green underside* and many more. Then in the evening at about 4 p.m. the sun came out so I sallied forth again and in a little path near the road took my first *Acraea vespertalis* and, finally, in a space of some 10 yards, no less than 10 of the purple *Abisara* of at least 2 spp. (I believe 3), one quite new to me with a light blue patch around the eye spot of the H.W.† Why they were all three together, I can't imagine. This is a very comfortable Rest Camp and, as things look promising, we will probably stay a week.

12/10: This has been a marvellous day in spite of dull cloudy weather—but it was warm and I suppose my bait worked well accordingly. The best new spp. was *Diestogyna plagiata*,‡ a fine male, it appears to differ a bit from the plate and descrip-

* *Monotrichlis asochis* Hew.

* *Euryphene phantasia* Hew.

† *Abisara caerulea* Riley.

‡ *Diestogyna niepelti* Neust.

tion in Seitz, but there is no other with that rounded blue patch on the H.W. a lovely thing in the sun, but still not equal to opis. I want to see *D. schultzei*, which might approach it, but I doubt if anything will. The second great catch was 2 females of *Euryphene symphona*—it isn't described in Seitz and I wonder of it is new, instead of the white sub-apical bar of the male, it has a yellow one, mimicing the yellow barred *Euphedra* and below it has the white marks of *E. preussi*, though of course differently formed, I had been hoping very much to get this. Next in importance was *Euphedra imitans*, of which I took 3 males and 1 female!, and *Anthene thrysis*, 6 males and 3 females, no less! Apart from these several *Euphedra* and *Euryphene*, of which at least 2 are new to me, but will require working out when set, a *hippocoonides* of *dardanuc* and several fine looking *Benitistes*. Alas no *Pseudacraeas* have appeared. I think there are not enough open spaces to bring them down, and I have evidently left the area of *antinachus* and *zalmoxis*. Finally among some bugs and beetles taken today was a most unusual *Curculionid*, head and thorax snow white, and the remainder black.

13/10: Rain all day.

14/10 to 15/10: I did not write yesterday, chiefly because of a very strenuous day—both days have been good, and I have collected musses of stuff—quite a few new to me, chiefly *Diastogyna* and *Cymothoe*. The West African *Cymothoe coccinata* occurs here in what appears to be the typical form, also *Cymothoe reinholdi*, 2 males and 2 females taken today, and several of the smaller species, *Cymothoe beckeri* is one of the commonest butterflies in both sexes, and a year or so ago, I would have tumbled over myself to get one! I also took here the females of *Euryphene conus*. Another interesting find is a *Euphedra*—maybe *E. herberti*, the female which I got today is a lovely thing—closely resembles *spatiosa*, but with very large white apices, and a broad darker border to the h.w., it is almost as large as its model—unfortunately I missed another fine specimen.*

Of the *Diastogyna*, *gambie* and *lysandra* are fairly common here—*camarensis*, of which I got the female today, occurs, but is rare, also *plagiata*†—I got one more male. We go on tomorrow, but, unlike Beni, I am left with an unsatisfied feeling, for I have seen and not taken three very distinct insects. The least important was a *Diastogyna*, I actually had it in the net and it got out! It was a fine insect with a large jet black round spot on the H.W. beneath, like *melanops*, but with a similar spot also on the F.W. Above it was dark yellowish brown with the usual black spots and a yellow sub-apical band. Lastly an insect as large as *Euphedra medon*, with also, strangely enough similar large round black spots below. I cannot think what else it could be, but *Harmilla elegans*! It is said that these are really the only two insects, (*Lepidoptera*), I have seen on this safari, which might be new and I failed to get either.

I rather think we get out of the forest now and I expect Yei, will be the next collecting place, but we shall stop at the elephant farm near Faradje, which is a thing I have always wanted to see.

Pseudacraeas have been conspicuous by their absence here, but I have seen or taken quite a lot of *Benitistes*, of one sort or another. *Ps. hostilia warburgi* is the exception to the former remark. We still have about 1,200 miles to do!, chiefly, I'm afraid, through dry country!!

* It was.

† *D. niepelti* Neust

* *Harmilla hawkeri* J. and T. Taken later by my native collector. The "*Diastogyna*" mentioned above, which escaped, proved to be the male.

20/10 YEI, *S. Sudan*: The last few days were spent in travelling, one night between Bambili and Dungu, one at Dungu and one at the elephant camp at Gangala near Farae, arriving here yesterday. There is plenty of forest and good collecting ground as far as the Uele River at Bambili, but after that, one passes through savannah all the way. Dungu is a pretty place, built at the junction of the Dungu and Uele Rivers, both thereafter, becoming the Uele; another immense river. But the elephant training camp is the really interesting thing on this road. It is run by a Belgian army officer, Lt. Haezaert, with an assistant and 150 Bazande askaris and there are about 36 elephants in the camp at the moment.

Once a year about February, when the grass is short, the wild herds are driven into a small area and then surrounded. Apparently they then bunch together, heads innermost, like cattle when alarmed. The askaris then go amongst them and attach ropes to the hind legs of the young ones and the herd is then allowed to move off followed by the askaris. As an elephant passes a suitable tree, his askari, quickly passes the loose end of the rope round the tree and ties it and the animal is caught and remains behind. Finally when all are attached, "monitor" elephants, as they are called, i.e. large fully trained animals, are sent in with their mahouts to collect the bag!! They approach a captive, shoulder him against the tree and a rope is placed round the neck and another round the body—these are then hitched onto the monitor, who then moves off, dragging the captive with him, to a large stockade, where they are kept, roped, but otherwise free, and well fed for about 3 months, after which training begins. The monitors take them daily to water, apparently they suffer severely at first from the shock and this 3 months rest is therefore necessary. We saw the present herd taken down to it's evening bath each with it's mahout,—they march into the water in an orderly line, lie down, wash, drink and then march off home again. We followed and saw them all tethered in the lines by chains attached to stout posts and then fed. There are two lines of elephants facing each other and the food is piled in the centre. Each mahout then parades in front of his elephant and the C.O. inspects;—having made this inspection he gives the word by bugle and the mahouts move the piles of food and stack them in front of their own animals. In fact it is treated exactly like the evening "horse lines" in a cavalry regiment!

They are most amusing to watch; some immediately collect a large bunch of branches and stack it on their heads to keep off the flies, others sort out suitable sticks with which to scratch themselves! All of course, have already been out feeding for most of the day, so are not really hungry, but nevertheless, before morning, all is gone. Two sentries are on duty at each end of the lines throughout the night. It is not an easy job for the C.O.—the training is entirely in his hands and it is a tricky job. Often he is charged, and many elephants remain permanently difficult and bad-tempered. A mahout was recently killed by his elephant, probably because one day he beat it up. Besides the elephants, and the administration of the askaris, he has a huge farm to look after, growing food for the elephants, a large herd of cows and ponies and is also, in charge of the abutting immense northern game Reserve and all it's scouts! He has one assistant and no clerks and I wondered how some of our pampered bureaucrats would like it!

It was a great experience, which I wouldn't have missed for anything and I hope some of my photos will come out well enough to send you a few.

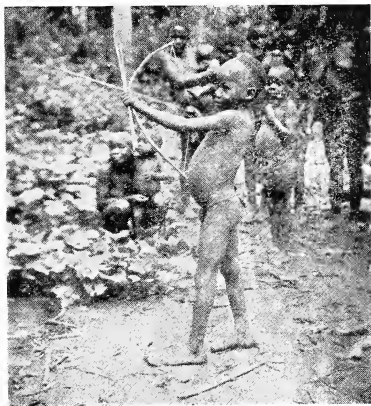
Next day we made a good run, got through the Customs at Aba and slept in Yei, staying, in fact, over the next day and being royally entertained by Duke, the D.C. Then on Monday my friend and I parted, he to return to Kenya, via Juba and Kampala, I to try my luck in Aza Forest in Amadi District. I slept last night at Amadi and came on today via Meridi to the nearest Rest Camp at Aza. The main roads are fair but the last 35 miles from Meridi was definitely bad and ended in three miles of track, down which I forced my way like a tank through ten foot elephant grass! Ultimately, however, I arrived at quite a pleasant little camp on the



Forest near Buta—a brief halt here produced many fine species.



Pygmies: The Beauty Specialist at Work.



Pygmies: A young marksman.



The Forest at Beni.

edge of the forest and propose to settle down for about ten days. One cannot, of course, this year, escape from the deluge—all the way from Yei I have travelled on soaking wet roads and it is now pouring here; I, verily believe, if I had chosen Port Sudan as the next stop, or Aden, it would be pouring there. I hear the roads around Soroti, Lira, Mbale in Uganda are under water and have been for weeks, much damage has been done lower down the Nile and at Niangara, we heard that the big bridge we had crossed a few days before over the Rubi River at Buta, had been completely washed away! and so we go on! If it is still raining when I get home, I shall sell the farm!

Tomorrow, maybe I shall have some entomological news—it depends on whether I can get into the forest, whether it is a forest at all in the true sense and finally on whether someone can temporarily prevent Lake Superior from emptying itself on this poor benighted continent once every twenty-four hours!

Today is the 22nd October, I believe—

23/10: I regret to report that in spite of a sunny day and quite a good path, I found nothing at all! *Pap. dardanus*, common *Neptis*, common *Hesperids* seem to make up the present fauna here. Its disappointing, but, on the other hand proves that the connection here lies with Lotti and Uganda rather than with the Congo forests. I did take a *Telipna aurivillii** which is a nice thing, but common in Budongo.

For the rest I collected Odonata, Coleoptera etc. Tomorrow I will try some Paw-Paw as bait, there are no bananas, but I am not optimistic. I think about two more days and then home—its unfortunate that there are no other collecting spots en route—only and feel I've come a long way already! Looking after the collections and my Yambio might be interesting, 70 miles further on, but I hear it is "Gallery Forest" I found the same with the Laboni Forest, west of the Imatongs in 1939, whereas Lotti, with a road running through it, was good. I cannot, however, be entirely a matter of opening up, for places like Epulu and Yopole, quite untouched, were good. I wonder if these are new forests—they have somewhat that appearance; for instance, the undergrowth is very dense, but mostly consists of saplings and there is little or no true forest undergrowth of ferns, aroids etc. I have not even seen *Catuna*, along the paths, so I do not think my bait will do any good.

24-25/10: Well, I stayed on here another two days, chiefly because I was tired of travelling! and in any case, this is a pleasant little spot—but collecting has been useless—no butterflies of interest and the beetles etc., which I got the forest guards to collect!, look all normal, common, Uganda things. I made a small collection of *Odonata* for the British Museum but again I expect they are all cosmopolitan spp. So tomorrow we go and this time it is for home. I don't expect I shall write any more of this—it has been a grand safari, though unusually strenuous and accompanied by more than the normal number of snags, but they all sorted themselves out in the end.

I feel I have spied out another large section of Africa, which I now know, roughly, how to divide up and do more intensively. There is an inner triangle roughly from Nia Nia to Stanleyville and thence to Banalia on the Aruwimi, which is lower-lying and probably a bit different and which I haven't done at all—whereas the whole outer perimeter, bounded by Beni—Irumu, Buta and Epulu seems to be very roughly homogeneous. I have collected at, again roughly, all four corners and found mostly the same spp. at each. The inner circle may again be the same, but in it I saw things like *Pap. zalmoxis* and *Amauris vashti* which did not occur, apparently outside. I shall have to overcome my dislike of *Simulium* and go and investigate it next year! It has certainly been a success and the catch has fulfilled even my wildest dreams, but in large measure the success has been due to the unflinching help and courtesy I have received from the Belgians throughout the safari.

* *Telipna acraea* Dbl. and Hew,

NOTES ON THE AFRICAN SUNBIRD, *CINNYRIS AFRA* *GRAUERI* NEUMANN.

By John G. Williams

(*The Coryndon Memorial Museum, Nairobi, Kenya Colony*).

The Ruanda Double-collared Sunbird (*Cinnyris afra graueri*) was described in 1908 by Neumann from material collected in the western Kivu Volcanoes. Since its discovery few ornithologists appear to have studied the bird in its natural haunts, the only notes on its habits that I can find being a brief account published by Count N. Gyldenstolpe (1) in his report on the results of the 1921 Swedish Expedition to Central Africa. In view of the paucity of information concerning this sunbird in existing literature it seems desirable that the present details be put on record.

The following data are compiled from field observations and specimens collected on Mts. Muhavura, Mgahinga and Sabinio in the Birunga range, south-western Kigezi, Uganda, during September 1946, when the writer was a member of the Coryndon Museum Gorilla Expedition to that region.

Plumages. Juvenile examples of *Cinnyris afra graueri* were not encountered, but two immature males (age confirmed by state of skull ossification) collected on Mount Muhavura on 22nd September are retaining some worn juvenile plumage on the upperparts and breast, indicating a moult from juvenile to first adult breeding plumage. The first adult male plumage closely resembles that of the fully adult male, but the red chest band is less extensive and the red duller in tone; also, the metallic green margins to the feathers of the upperparts are narrower. Neither of the two immature males exhibits any trace of red in the under tail coverts, this character being confined to a few old breeding males.

There would appear to be no eclipse plumage in males of this race (cf. Ibis 1945:156); several of the adult males in the series collected are retaining a varying number of worn metallic feathers on the upperparts and throat, indicating a moult from breeding plumage to breeding plumage.

Colours of soft parts: Iris dark brown; bill black; feet black.

Measurements. Adult Males: Wing 64-66 mm.; Bill 17-19.5 mm.; Tail 55-59 mm. (15 eastern Birunga specimens examined). Adult Females: Wing 58-61 mm.; Bill 16-18 mm.; Tail 45-47 mm. (5 eastern Birunga specimens examined).

Distribution. *Cinnyris afer graueri* is the commonest sunbird on Mount Muhavura. One first encounters it in the forest just below the bamboo zone, where its range overlaps that of *Cinnyris regius kivuensis*. However, it is far from common at this altitude (circa. 7,500 ft.), but becomes more frequent after the bamboo zone is entered. Its centre of abundance is in the hypericum scrub immediately above the bamboos (alti. c. 9,000 ft.). Here it exists in unbelievable numbers, and several times I counted over thirty sunbirds, mainly adult males, feeding in a single flowering *Hypericum* tree. On the volcanoes Mgahinga and Sabinio it is also a common species, but not in such abundance as on Mount Muhavura.

General Habits. This species would appear to be rather less pugnacious than many other sunbirds, numbers often feeding together in the same flowering tree without excessive skirmishes between rival males. *Nectarinia johnstoni darlimouthi* was also observed feeding in the same tree as *Cinnyris afra graueri* without disturbance. In the field the male's red breast is most conspicuous, but the yellow pectoral tufts are often overlooked.

Food. *Hypericum* flowers were by far the most attractive to *graueri*, although it also visited various flowering creepers, but it was seen only rarely at flowers near the ground. It was also observed feeding amongst leafy branches of trees bearing no flowers, when its appearance was very tit-like. An examination of twenty stomachs gives the following result. In order of abundance,—spiders; minute insect remains, mainly coleoptera; small lepidopterous larvæ (4 records); Diptera? Nectar was probably present, but is difficult to detect. In one freshly-shot specimen nectar dripped from the bill.

Voice. The usual call-note of *Cinnyris afra graueri* is a harsh, sharp 'tsp' or 'chee', generally repeated twice. The male's song is a pleasing warble, rising in pitch towards the end and then dropping. A rendering of the song, recorded whilst listening to a bird singing, is as follows:—'chee-oo, che che,—chee-oo, che che,—se, se, se, se, se, se, se,—che chit,—che chit—che chit.'

Display. Although abundant and breeding I saw males displaying on two occasions only. Once a male was seen to alight near a female, warble a few notes and drop its wings like a young bird begging for food. The female paid no attention, whereupon the male left, flew straight up into the air as if flycatching, and then returned to its original perch. The female then flew away, to be followed instantly by the male in hot pursuit. The second observation closely resembled the first, but the male when dropping his wings at the same time raised and fanned his pictorial tufts.

Breeding. On the Birunga Volcanoes breeding evidently takes place during the rains, commencing about the middle of September and continuing until at least last November. This is estimated on the evidence of gonad development of adult males collected during September. There is also a secondary breeding season from late March until May; this is apparent from the presence of immature birds, 5-6 months old, during September, and Gyldenstolpe (1) records of nests under construction at the end of March.

Nest building appears to be carried out entirely by the female; no male was observed collecting or carrying nesting material, although the female was generally accompanied by the male to the immediate vicinity of the nest when building was in progress. Incubation is performed by the female alone; no indication of an incubation-patch was noted on any male collected.

Five nests were found in late September 1946. Two, on 23rd September contained c/1 fresh, c/1 incubation advanced. Both these nests were suspended from twigs at the end of thickly-foliaged branches, some six to eight feet from the ground, and well concealed amongst drooping leaves. Two uncompleted nests were located the following day by watching the females carrying nesting material; these were hanging from the ends of bamboo sprigs, between eight and ten feet from the ground, and again were well concealed by leaves. The fifth nest, which it was not found possible to examine, was hanging from the end of a leafy branch over a gorge. This nest was much less well hidden than the other four.

The nest of *Cinnyris afer graueri* resembles a larger edition of that of *Cinnyris reichenowi*. It is more or less rounded, the main structure measuring $3\frac{1}{2}$ " across by from 4"—5" high. It has a side-top entrance ($1\frac{1}{2}$ " x 1") with a small projecting porch, the *Thalictrum* stemlets and moss of which extend upwards and outwards, forming a tattered spire. Below the entrance loose nest material hangs raggedly from the nest, one to six inches below the main structure. The rest is composed of the hair-like flowering stalks of *Thalictrum*, *Usnea* lichen, fine shredded grass, strips of

bamboo leaves, moss and vegetable down, bound together with cowebs. Nest lining is of well-packed vegetable down and a few doves' feathers. The nest is attached by twists of lichen and cobwebs for some two inches along the support twig.

One egg would appear to be the normal clutch, as in one of those collected incubation was advanced, and in the case of the fresh egg the female returned to the nest shortly after being disturbed. The egg of *Cinnyris afra graueri* is of a dull matt texture without gloss; ground colour white, almost obscured by ashy-grey freckling and clouding; a dark ring present at large end; markings generally merged and indistinct. One egg is also faintly and sparingly marked with pale brown streaks. Measurements:—20.5 x 12 mm.; 19.3 x 12.9 mm.

REFERENCE

- (1) Gyldenstolpe, Nils (1924). 'Zoological Results of the Swedish Expedition to Central Africa 1921, Birds.' Kungl. Sv. Vet. Akad. Handl. (3):91.



The typical habitat of *Cinnyris afer graueri* Neumann; high level Hypericum scrub on Mt. Muhavura, Birunga Volcanoes, Kivu.

Photo: J. G. Williams.



Nest of *Cinnyris afer graueri* Neumann.
Photo: P. R. O. Bally.



Egg of *Cinnyris afer graueri* Neumann.
Photo: P. R. O. Bally.

NOTES ON SOME BIRDS' EGGS COLLECTED BY SIR CHARLES BELCHER IN NYASALAND.

Sir Charles Belcher has most kindly sent me a complete list of clutches of birds' eggs in his collection taken in Nyasaland. I understand that these, together with all his other African eggs, are to be presented to the Coryndon Museum. This list was sent to me in connection with the preparation by myself of a check-list of the birds in Nyasaland, to include brief statistical data as to breeding seasons. The data below seem worthy of preliminary publication. They were either not included in Sir Charles' book, "The Birds of Nyasaland" (1930), or correct or amplify information therein. It will not be possible to include these details in the check-list. All measurements below are in millimetres.

Gallinula angulata Sundevall. Lesser Moorhen.

Eggs attributed by Belcher (1930, p. 68) to *Porphyry alleni* are now considered by Sir Charles to be attributable to *G. angulata*. For further details, see Benson "The bird-life of Lake Nyasa," in MS for Nyasaland Journal.

Chrysococcyx spp.

The following data correct and amplify those given by Belcher (1930, pp. 109-110). With the further experience he has subsequently gained, Sir Charles feels sure that the eggs attributed below to *C. caprius*, at any rate, are correctly identified. In each case there was one egg only of the cuckoo. These records should be read in conjunction with the notes by Belcher, "Nature in East Africa", Bull. E.A. Nat. Hist. Soc., ser. 2, no. 2, 1949, pp. 19-20.

Chrysococcyx caprius (Boddart). Didric Cuckoo.

(a) Size 22 x 15, uniform light blue, taken by R. C. Wood, from nest of *Euplectes* sp., no eggs of host, Chiromo, February, 1918.

(b) Size 22 x 14, very dull light blue, faintly spotted, with C/2 *Anaplectes melanotis rubriceps* (Lafresnaye), unspotted, Nyambadwe, Blantyre, 7th November, 1921.
.....

(c) Size 22 x 14.5, well spotted on greenish blue, with C/1 *Ploceus n. nigriceps* (Layard), Chintechi, 31st October, 1926. The latter, size 23.25 x 14.75, is clearly of the same general type as the cuckoo's egg, but differs in shade of ground-colour and markings.

(d) Size 21 x 14, very dull light blue, from nest of *Anaplectes melanotis rubriceps*, with 2 eggs of the host, Nyambadwe, 7th November, 1921.

(e) Size 22 x 14.25, uniform light blue, taken by R. C. Wood, with C/2 *Euplectes orix sundevalli* Bonaparte, Chiromo, 15th February, 1917.

(f) Size 21 x 15, with C/2 *Euplectes hordeacea sylvatica* (Neumann), Nyambadwe, Blantyre, 14th April, 1924. Sir Charles remarks that it is a "fatter" egg than is usual with this cuckoo, and immaculate, of a more greenish blue than eggs of the host.

I may mention that I collected near Salima, 20th February, 1950, an egg which is probably attributable to *C. caprius*. It measure 23.5 x 13.5. It is glossy white, plentifully freckled all over with reddish brown and some underlying greyish lilac. It was found on the ground, immediately below a nest of *Anaplectes m. rubriceps*, containing a single still naked young bird. It contained an only slightly developed embryo. It will be presented in due course to Captain C. R. S. Pitman.

Chrysococcyx klaasi (Stephens). Klaas's Cuckoo.

Size 17 x 15, uniform dark turquoise blue, with C/2 hatching of *Euplectes orix sindevalli*, Port Herald, 26th February, 1926. Sir Charles remarks that he kept no record of the colour of the host's eggs, but that the cuckoo's egg is noticeably darker than any of some fifty eggs of *E. orix* that he has.

Chrysococcyx cupreus intermedius Hartlaub. Emerald Cuckoo.

Single eggs from two nests of *Chalcomitra senegalensis gutturalis* (Linnaeus), attributed by Belcher (1930, p. 110) to *C. klaasi*, measurements not 20 x 13.5 as given previously, but 19.5 x 12.5 (Nyambadwe) and 19.75 x 13.5 (Ncheu). Sir Charles emphasises again that these eggs are just like each other, and unlike normal *Chalcomitra* eggs. They are pointed, like eggs of *C. caprius*, yet too small for that species, and too long for *C. klaasi*. They may therefore be attributable to *C. cupreus*. *Caprimulgus tristigma leutiginosus* Smith. Freckled Nightjar.

C/2, Zomba, 31st October, 1923.

Size 31 x 21.5, blotched with grey on white ground; thus agreeing well with the description by Benson, "Ibis", 1947, p. 566. There is no other locally breeding *Caprimulgus* to which this clutch could be attributed. This is only the second clutch of *C. tristigma* recorded from Nyasaland.

Indicator spp.

The following data correct and amplify those given by Belcher (1930, pp. 163, 167-8, 171-2).

Size a, probably *Indicator variegatus* Lesson. Scaly-throated Honey-guide.

C/3, with C/3 *Buccanodon w. whytii* (Shelley) and C/1 *Indicator minor* (see below), Blantyre, 16th October, 1921.

C/1 with C/5 *Buccanodon w. whytii*, Blantyre, 16th October, 1921.

C/1 with C/2 *Dendropicos fuscescens camacupa* Bowen, Nyambadwe, Blantyre, 22nd September, 1926.

Sir Charles considers that the first-mentioned clutch in each case above, the eggs of all of which measure approximately 22.75 x 18, is attributable to *I. variegatus*, a species, which although he states in his book he did not meet with in Nyasaland, he informs me he did in fact collect near Blantyre. He points out that these eggs are not so large as certainly parasitic eggs from Kenya Colony, presumed to be of *I. indicator* (Sparrman), measuring 24.5 x 19. Moreover Roberts, "Ostrich", 1939, pp. 101-5, gives 23.2-26 x 17.8-20 (one 23 x 16.8) for *I. indicator*, while admitting that some of the eggs he examined might be of *I. variegatus*, for which otherwise he gives no measurements. It may also be mentioned that Benson gives a measurement of 23.1 x 18.0 for an egg almost certainly of *I. indicator*, not of *I. variegatus*, see "Parasitisation of Bee-eaters" (MeropidZ) by Honey-guides *Indicator* spp., "Ibis", 1950, p. 478.

Size b. *Indicator minor minor* Stephens. Lesser Honey-guide.

C/1, 20.5 x 17, with C/2 *Campethera scriptoricauda* (Reichenow), Chiromo, 4th November, 1921.

C/1, 19.5 x 16, with C/3 *Buccanodon w. whytii* and C/3 *I. variegatus*, Blantyre, 29th September, 1926.

C/1, 20.25 x 17, with C/3 *Buccanodon w. whytii* and C/1 *I. variegatus*, Blantyre. 16th October, 1921 (see above).

Sir Charles agrees that these size b. eggs must be attributed to *I. minor*, measurements of the eggs of which Roberts, *op. cit.*, gives as 20.3-22.5 x 16-17.9. But the possibility of their being attributable to *I. exilis*, which does occur near Blantyre, see Benson and Benson, "Ibis", 1948, p. 392, should not be lost sight of, though eggs of that species may be expected to be appreciably smaller. Grant and Præd, Bull. Brit. Orn. Cl., vol. 58, 1938, pp. 144-5, give wing 73-80 for the local race (*I. e. meliphilus* Oberholser) compared to 80/79 for *I. m. minor*.

Telophorus quadricolor quadricolor (Cassin). Four-coloured Bush-shrike.

C/2 Chikonje, Chiromo, 9th April, 1917.

These eggs were attributed, though doubtfully, to *Nicator chloris gularis* Finsch and Hartlaub, see Belcher (1930, p. 274). But Sir Charles has subsequently found them to agree closely with eggs of *Telophorus doherityi* (Rothschild), which he considers is conspecific with *T. quadricolor*. *T. q. quadricolor* does occur in the Chiromo area, see Benson and Benson, "Ostrich", 1948, p. 13. Moreover, in size ($23\frac{1}{2}$ x $16\frac{1}{2}$) they agree with *T. quadricolor* rather than *N. chloris*, see Roberts, "The Birds of South Africa" (1940, pp. 306, 309).

C. W. BENSON.

P.S.—At Mkhoma, Nyasaland, 22nd October, 1950 I took C/3 *Lybius t. torquatus* (Dumont), size 24 x 18, 24.5 x 18, 25 x 17.5, with C/1 almost certainly *Indicator m. minor*, size 21 x 16.5. The latter egg is more rounded and markedly glossy, the other three having hardly any gloss. All the eggs were fresh. Those of the barbet and yolk apricot-red, showing through the shells of the unblown eggs as a pinkish suffusion, whereas that of the honey-guide had yolk yellow, not showing through the unblown shell. For earlier notes on parasitisation in Nyasaland, the same two species concerned, see "Ibis", 1940, p. 430.

A STARTLINGLY TURQUOISE-BLUE GECKO FROM TANGANYIKA

By Arthur Loveridge,

(*Museum of Comparative Zoology, Cambridge, Mass.*)

During a recent collecting trip in Central Tanganyika Territory, Mr. J. G. Williams visited the thick, low-level, rain forest at Kimboza to the south-east of the Uluguru Mountains. While there his attention was attracted to a small gecko by its brilliant coloration. Having shot it without damage, and believing it to be new, he submitted it to me for determination. I take pleasure in naming it:

Lygodactylus picturatus williamsi subsp. nov.

Type.—Coryndon Memorial Museum, No. 50/898, an adult ♂ from Kimboza Forest at 1,000 feet, Eastern Province, Tanganyika Territory. Collected by J. G. Williams, 23rd November, 1950.

Diagnosis.—In its scalation apparently indistinguishable from typical *picturatus*, occurring in the surrounding savannah region, but strikingly different in coloration, which may be defined as follows:

♂. Above entire upper surfaces brilliant turquoise blue; from nostril through eye to nape is a broad black streak; three or four scales above this a sharply defined black chevron, one or two scales in width, extends back to the nape except for a two-scale-wide interruption above each orbit; flanks finely speckled with black; limbs almost immaculate. Below, chin and throat turquoise blue overlaid by an ill-defined black chevron on the mental and along the base of the labials; four parallel, broad, sometimes coalescing, black streaks extend from chin to neck; forelimbs, chest, belly, and base of tail pale orange, deepening to orange towards the sides and on the hind limbs, rest of tail bluish grey *p. williamsi*.

♂. Above, head and shoulders bright mustard-yellow, speckled and streaked with brownish black; body, limbs and tail blue-grey, uniform or flecked with brownish black such markings sometimes coalescing to form lines. Below, labials mustard-yellow; throat uniformly deep velvety black, only rarely showing traces of chevrons; breast and belly orange (fading to white on preservation); tail grey *p. picturatus*.

Description.—Internasal granule 1; nostril surrounded by 2 nasals and a labial; upper labials 7-8 (right-left); lower labials 8-8; postmentals 3; scansors under fourth toe 5; preanal pores 7. Consequently within the range of the typical form as described by me in the "Revision of the African Lizards of the Family Gekkonidae" vide Loveridge, 1947, Bull. Mus. Comp. Zool., 98, pp. 200, 234).

Color.—See diagnosis above.

Size.—Total length of holotype ♂, 75 (34+41) mm., the prehensile tail-tip being intact.

Remarks.—So far as I can recall, not one of the 210 species or races of African geckos displays such brilliant coloring; the vast majority of the Gekkonidae being procryptically colored. For so brilliant a turquoise blue we must turn to the male agamids, skins, or lacertids among African lizards. The position of this tenth recognizable race of *Lygodactylus picturatus*, appears to be at the very end of the entire genus,

NEW SPECIES OF AFRICAN STAPHYLINIDÆ

PART III

by MALCOLM CAMERON, R.N., M.B., F.R.E.S.

TACHYPORINÆ

1. *CONOSOMA PUNCTICOLLE*, sp. n.

Moderately shining black. Antennæ and legs reddish yellow. Length 5 m.m. A large robust species near *obesum* Boh. but with much longer elytra and much shorter 11th antennal segment, the punctuation of the head and thorax much stronger. Antennæ extending to the base of the thorax, the 3rd segment much longer than the 2nd, as long as the 4th, 5th to 8th longer than broad, decreasing in length, 9th and 10th as long as broad, 11th about as long as the 9th and 10th together. Thorax broader than long, (6.75:5) convex, closely, rather finely but distinctly punctured and with distinct transverse ground sculpture. Elytra longer than the thorax, 6:5) the punctuation much as in *obesum*, much less fine than in *litoreum* L. finer and closer than on the thorax, the ground sculpture very fine. Abdomen finely and closely punctured and with very fine ground sculpture and long black setæ. Pubescence throughout very fine and rather close.

UGANDA: Kilimzu For. 1037 (T. H. E. Jackson). Unique. Type in B.M.

2. *CONOSOMA ABERDARENSE*, sp. n.

Moderately shining, black, the posterior margin of the thorax very narrowly, the tergites more broadly rufescent. Antennæ black, the first three and last three segments reddish yellow. Legs reddish yellow. Length 4 mm. (the abdomen moderately extended).

In build and colour much like *obesum* Boh. but with shorter, stouter differently coloured antennæ, the 11th segment much shorter, the posterior margins of the tergites rather broadly rufescent, the punctuation of the head, thorax and abdomen much finer and less close, that of the elytra scarcely differing in the two species; the ground sculpture on head, and thorax, distinct. Thorax transverse (5.5:3.75) convex, extremely finely moderately closely punctured; ground sculpture distinct, transversely striate: head with similar sculpture. Antennæ rather short, 3rd segment a little longer than 2nd, 4th and 5th, a little longer than broad, 6th as long as broad, 7th to 10th slightly transverse, 11th slightly longer than the 10th. Elytra as long as as broad as the thorax with fine, rather close asperate punctures and very fine ground sculpture. Abdomen finely and rather closely punctured on the anterior tergites more sparingly behind, the ground sculpture distinct. Pubescence throughout fine, rather short and close as in *obesum*.

KENYA COLONY: W. Aberdare Mts. 10-11,000 ft. 11.19435 (A. F. J. Gedye). Unique. Type in B.M.

3. *CONOSOMA GEDYEI*, sp. n.

Moderately shining, yellowish red, the elytra near the middle of the posterior margin with an obscure round brownish marking. Antennæ and legs yellow, the 8th

to 10th segments of the former slightly infusate. Length 2.2 mm. In size, build and ground colour resembling the var. *lividum* Er. but less shining, the antennæ much shorter, the 6th to 10th segments transverse, increasing in width, the 10th fully twice as broad as long, the puncturation of the fore-parts yet finer and not so close and with an extremely fine striate ground sculpture. Abdomen very finely and rather closely punctured on the anterior segments, much less closely behind, the ground sculpture similar. The pubescence throughout is longer and coarser. Antennæ with the 3rd segment shorter than 2nd, 4th slightly longer than broad, 5th as long as broad.

KENYA COLONY: Nairobi—3, 1940. (A. F. J. Gedyé). Type in B.M.

4. *TACHINUS* (s. str.) *TURNERI*, sp. n.

Entirely black, the fore-parts shining, the abdomen duller. Antennæ black. Legs brownish-yellow, the tibiae infusate. Length 5 mm. In size and build much like *scapularis* Steph. but differently coloured, the antennæ a little longer, the penultimate segments very slightly longer than broad; puncturation of head and thorax very similar, but without ground sculpture; elytra much less finely and more closely punctured without distinct ground sculpture; abdomen more closely and deeply punctured, the ground sculpture more evident.

♂: 8th tergite produced in the middle as a broad triangular plate truncate at apex or with a small notch; on each side with a stout short triangular process, shorter than the central plate.

♀: 8th tergite with an acutely pointed and bisetose median plate, on each side with two long narrow processes each with a long seta at apex, the lateral process adjacent to the central plate extending beyond it, the outer lateral process shorter than the central plate.

KENYA COLONY: Londiani—5, 1936. (H. J. A. Turner).

ALEOCHARINAE

5. *NOPROMACA* *TURNERI*, sp. n.

Fore-parts dull, head and thorax black; elytra reddish, infusate at the sides; abdomen black, shining. Antennæ black, the first two segments and legs reddish yellow. Length 3.5 mm.

Colour and lustre of *trifida* Cam. but more robust, the head not so distinctly punctured, antennæ with less transverse penultimate segments, elytra rather more finely and closely, less roughly punctured. The structure of the 8th tergite in the ♂ is similar but the 6th and 7th are without the impressions seen in that species: in all other respects similar.

KENYA COLONY: Naivasha—12, 37. (H. J. A. Turner). Unique. Type in B.M.

6. *GYROPHAENA* (s. str.) *INTERMIXTA*, sp. n.

Shining black, the base of the elytra narrowly and obscurely brownish-yellow, the first two visible tergites obscurely reddish. Antennæ black, the first four segments and legs reddish-yellow. Length 2.3 mm. In build much like *pulchella* Heer. but in all other respects quite different. Head rather broad but narrower than thorax, the sides with a few moderate punctures; ground sculpture distinct, coriaceous. Antennæ with

the third segment shorter than the 2nd, 4th small, transverse, 5th to 10th stouter only slightly transverse. Thorax transverse (3.5:2.5), the sides rounded in front, straight and more retracted behind, with dorsal row of five punctures, the basal ones the largest, the others sometimes more or less obsolete, at the sides with four or five others; ground sculpture scarcely visible. Elytra longer (3.5:2.5) and broader than the thorax (5:3.5) in the ♂ with some small scattered granules, in the ♀ with fine simple scanty punctures; the ground sculpture very fine. Abdomen nearly impunctate, distinctly coriaceous. ♂ elytra with granules: 8th tergite with curved cultriform process on each side, in the middle with a pair of close straight blunt spines as long as the lateral processes.

KENYA COLONY: Ngong—6, 43. (V. G. L. Someren). Type in B.M.

7. **GYROPHAENA (s. str.) PULCHRA**, sp. n.

Shining, head black; thorax yellowish red; elytra yellow, the postero-external area broadly infusate; abdomen reddish yellow, the 6th tergite infusate. Antennæ black, the first four segments and legs reddish yellow. Length 3 mm. In colour and build much like *pulchella* Heer but larger and more robust, the antennæ differently coloured, the fore-part without ground sculpture. Head with a few small punctures on each side. Antennæ with the penultimate segments slightly transverse. Thorax transverse (4.5:3), the sides rounded in front, straight and more retracted behind with dorsal row of four small punctures and one or two others at the side. Elytra longer (4:3) and broader than the thorax, broader than long (6:4) almost impunctate on the inner half postero-externally with a few small punctures. Abdomen very sparingly punctured, the ground sculpture very fine on the anterior segments, much stronger

KENYA COLONY: Ngong—6.43. (V. G. L. Someren). Type in B.M.
on the 6th and 7th ♂ unknown.

8. **CORDALIA GEDYEI**, sp. n.

Shining black, the thorax and base of abdomen dark brown. Antennæ black, the first three segments and legs reddish yellow. Length 2 mm. Build of *obscura* Gr. but much smaller and of darker colour, the head less finely and more closely punctured: Antennæ a little shorter and stouter, the 5th segment transverse. From *collarti* Cam. it differs in the head not widened behind the eyes and much more distinctly punctured, darker colour of body and antennæ, the elytra more finely punctured. The keel on the 8th tergite is similar.

KENYA COLONY: Athi Falls—5.37. (A. F. J. Gedye). In hippopotamus dejecta. Type in B.M.

9. **ATHETA (Acrotona) GEDYEI**, sp. n.

Rather shining; head pitchy black, thorax and abdomen yellowish red, the 6th and 7th tergites infusate, elytra yellow. Antennæ black, the first two segments and legs reddish yellow. Length 2 mm. Build of *orphana* Er. and with similar antennæ, but more brightly coloured, the head and thorax much more coarsely and deeply punctured, the elytra not quite so finely and rather less closely punctured, the sculpture of the abdomen scarcely differing but the sides and apex with long black setæ. Fore-parts without ground sculpture. Middle tibiae with a short seta, the posterior with a finer one.

KENYA COLONY: Athi Falls—7, 1937. (A. F. J. Gedye). In hippopotamus dejecta. Unique. Type in B.M.

10. ATHETA (Acrotona) KAMPALANA, sp. n.

Moderately shining, head dark red, thorax and first two tergites yellowish red, the rest of the abdomen and elytra black. Antennæ black, the first three and 11th segments reddish yellow. Legs reddish yellow. Length 2.5 mm. In build much like *finorum* Bris. but smaller, the thorax shorter and so more transverse, the antennæ stouter with longer 11th segment, the colour different. Head transverse, narrower than thorax, the post-ocular region rounded and as long as the eye; punctures rather fine and close, the ground sculpture feeble. Antennæ stout, moderately long, the 3rd segment as long as the 2nd, 4th and 5th small, transverse, 6th to 10th broader, slightly transverse, the 11th as long as the three preceding together. Thorax transverse, narrower than the elytra, the sides evenly rounded, with punctures very similar but closer than on the head, the ground sculpture feeble. Elytra longer and broader than the thorax, broader than long, scarcely emarginate postero-externally, finely closely asperately punctured, the ground sculpture very fine. Abdomen finely and less closely punctured than in *finorum*, especially behind.

UGANDA: Kampala—11, 38. (A. F. J. Gedyé). Unique. British Museum.

11. AENITONIA (Anommatoria) NAIROBIANA, sp. n.

Somewhat shining; head black, thorax and abdomen dark reddish brown, elytra black, the area between the dorsal and sutural costæ reddish yellow. Antennæ with the first three segments reddish yellow, the following reddish. Legs reddish yellow. Length 4.5 mm.

At once recognised by the colour of the elytra and more robust build than most of the species of the sub-genus. Head as broad as thorax, the eyes large, the temples prominent, bluntly angulate; disc with four ridges posteriorly, two at the base short and diverging posteriorly, two others longer and lightly curved near the inner margins of the eyes, and three blunt tubercles, two in front of these ridges and one median between the antennæ; sculpture coriaceous, impunctate. Antennæ with the first three segments elongate, the 2nd as long as the 3rd, 4th half as long, 5th to 10th transverse, differing but little, 11th short, a little longer than the 9th and 10th together. Thorax as long as broad, the sides straight scarcely retracted behind, the disc with two strong longitudinal keels, the sculpture as on the head. Elytra longer (3.75:2.5) and broader than the thorax, broader than long (4.5:3.75), each with three strong keels, the sculpture as on thorax. Abdomen narrowed at base and towards apex, rather closely and finely punctured, the ground sculpture weaker than on the fore-parts and with a fine short pubescence.

KENYA COLONY: Nairobi—26 12, 20. (A. F. J. Gedyé). Unique. British Museum.

12. ZYRAS (Eurydonia) SEPARATUS, sp. n.

Moderately shining: head dark reddish brown, the rest reddish yellow with the 6th tergite slightly infusate. Antennæ reddish, the first two segments and segments and legs reddish yellow. Length 5 mm.

In colour much like *naivashanus* Bernh. but a little narrower with shorter antennæ the 4th to 10th segments much more transverse, the thorax and elytra without ground sculpture. Head narrower than the thorax, (3.5:4.3) the eyes large, the temples short, with a few fine scattered punctures and very fine ground sculpture. Antennæ with the penultimate segments fully twice as long as broad, the 11th as long as the three preceding together.

Thorax transverse (4.4:3.75) convex, scarcely impressed laterally, the sides feebly rounded, very sparingly and finely punctured and with long yellow hairs and a few black setae especially at the sides. Elytra longer than the thorax (4:3.75) with closer and more distinct punctures, the pubescence similar. Abdomen parallel, finely and sparingly punctured, sparingly pubescent and without ground sculpture.

KENYA COLONY: Emali Range, Sultan Hamud—alt. 4,900-5,900 ft. Unique. British Museum.

reddish yellow. Legs reddish yellow. Length 9 mm. Near *johnstoni* Bernh. but more robust and except for the black sutural region very similar in colour, the antennae longer, the penultimate segments less transverse; head less transverse, the sculpture very similar, thorax less shining, finely sulcate along the middle, rather more finely punctured and with distinct coriaceous ground sculpture, the elytra much more finely and closely punctured with less distinct ground sculpture than on the thorax, the abdomen more finely punctured. Head narrower than thorax, transverse, the eyes large and prominent, longer than the post-ocular region, finely, moderately closely punctured, finely coriaceous. Antennae with the 4th to 10th segment slightly transverse, differing but little, the 11th as long as the three preceding together. Thorax sub-quadrate, transverse (6:5), the sides retracted and feebly emarginate to the rounded posterior angles, finely sulcate along the middle, rather finely, moderately closely punctured, more strongly coriaceous than the head. Elytra longer (6.5:5) and broader than the thorax, broader than long (8.5:6.5), the puncturation very similar but closer, the ground sculpture less marked. Abdomen finely, moderately, closely punctured, finely coriaceous.

TANGANYIKA TERRITORY: Tanga—Unique ♀. British Museum.

16. **ZYRAS (*Glossacantha*) JACKSONI**, sp. n.

Head and abdomen black, thorax and elytra yellowish red, the latter with the postero-external region to beyond the middle of the side, black. Antennae ferruginous red, the first three segments and legs reddish yellow. Length 7 mm.

♂: head as broad as thorax, eyes very large, finely and sparingly punctured, distinctly coriaceous, greasy lustrous. Antennae with the 4th to 10th segments moderately transverse, 11th as long as the 9th and 10th altogether. Thorax slightly transverse (5:4.5) without impressions, finely, only moderately closely punctured, the ground sculpture uniform and stronger than on the head. Elytra slightly longer than the thorax (5:4.5) broader than long (6:5), the punctures about as close but not so fine, the ground sculpture weaker. Abdomen finely and sparingly punctured, more closely at the base of the 5th tergite, very finely coriaceous, shining; the 3rd tergite on each side with a large convex process furnished internally with a sharp spine directed inwards backward and upwards, its apex not extending to the level of the posterior margin of the 4th and a longer spine external to the side margin and contiguous to it and extending a little beyond the level of the middle of this tergite, the interval between the bases of the two spines arcuate: 4th with an obscure ridge across the middle, its posterior margin with eight small tubercles: 5th with six small tubercles across the middle and four on the posterior margin: 6th with four similar tubercles across middle and four at the posterior margin: 7th with eight little tubercles, the median pair the largest across the middle: 8th broadly superficially impressed along the middle, the posterior margin nearly truncate and with four obscure teeth, the median pair widely separated.

SOMALIA: Afgoi—6, 1943. (T. H. E. Jackson). Unique. British Museum.

17. ZYRAS (*Glossacantha*) MENEGHETTI, sp. n.

Shining, entirely reddish yellow and without ground sculpture. Antennæ ferruginous. Legs reddish yellow. Length 7 mm. Differs from *Igoekii* Bernh. in the colour, smaller head and much shorter and thicker antennæ and the ♀ characters. Head a little narrower than the thorax (4:4.5), on the disc with a few very fine moderately close punctures, practically impunctate elsewhere. Antennæ short and very stout, 3rd segment short, a little longer than the 2nd, 4th to 10th three times broader than long, 11th as long as the three preceding together. Thorax transverse (4.5:4), the sides gently rounded and only slightly retracted behind, with fine sparing scattered punctures. Elytra slightly longer and broader than the thorax, the punctures much larger but scanty. Abdomen finely and sparingly punctured on the 3rd to 5th tergites, more coarsely and closely on the 6th to 8th.

♂: 3rd tergite on each side with an arcuate spine directed slightly inwards and extending over about half the 4th, the margin between truncate: 8th with feebly rounded posterior margin: 6th sternite a little produced, its posterior margin feebly and broadly emarginate in the middle.

ABYSSINIA: Dire Dana—7, 42. (Meneghetti).

18. ZYRAS (*Glossacantha*) CEPHALICUS, sp. n.

Shining reddish yellow, the 6th, 7th and 8th tergites more or less blackish. Ground sculpture absent except on the anterior half of the head. Antennæ very short and stout, ferruginous. Legs reddish yellow. Length 6.75 mm.

♂: head nearly as broad as the thorax, without inter-antennal tubercle, finely and sparingly punctured, the anterior half distinctly coriaceous and less shining. Antennæ with the 3rd segment scarcely longer than the 2nd, 4th to 10th strongly transverse, the penultimate three times broader than long, 11th as long as the three preceding together. Thorax slightly transverse (4.5:4), the sides evenly rounded and retracted to the base, the posterior angles completely rounded, the puncturation extremely fine and sparing. Elytra slightly longer and broader than the thorax, the punctures much larger and more numerous. Abdomen with fine, rather close puncturation on the 3rd tergite, much more sparing on the 4th and 5th, 6th to 8th distinctly more coarsely and closely punctured: 3rd tergite with a curved spine adjacent to the lateral margin and extending beyond the middle of the 4th: 8th with some small scattered tubercles, its posterior margin rounded: 6th sternite a little produced and feebly arcuately emarginate.

ABYSSINIA: Dire Dana—VII 42. (Meneghetti). Unique. British Museum.

19. ZYRAS (*Glossacantha*) SOMALIANUS, sp. n.

Shining; head and abdomen black, the 7th and 8th tergites reddish yellow; thorax and elytra reddish yellow. Antennæ ferruginous, the first two segments and legs reddish yellow. Length 6.5 mm.

♂: head almost as broad as the thorax, not impressed and without inter-antennal tubercle, rather finely and rather sparingly punctured, distinctly coriaceous. Thorax slightly transverse (4.3:4), the sides slightly emarginate in the posterior half, with a few small scattered punctures; ground sculpture absent. Elytra longer (4.5:4) and broader than the thorax, broader than long (5.5:4.5) finely and very sparingly punctured and without ground sculpture except at extreme base. Abdomen almost impunctate, finely coriaceous, the 3rd tergite broadly arcuately emarginate and narrowly bordered, on each side with two sharp spines separated by a narrow acute emargina-

tion, the inner spine shorted than the outer and directed backwards and inwards, the outer longer, curved over the lateral margin, neither spine extending to the level of the posterior margin of the 4th tergite; 6th with four little tubercles across the middle, the central pair larger; 7th with a pair of arcuate ridges in the middle, the area between depressed; 8th truncate posteriorly; 6th sternite a little produced and rounded, ♀: head without ground sculpture, more shining; antennæ stout, the 3rd segment twice as long as 2nd, 4th to 10th nearly twice as broad as long, the 11th as long as the 9th and 10th together.

SOMALIA: Belet Uen and Shillave—11, 41. (♂ type). Wardere, Ogaden Province—12, 44 (♀).

20. *ZYRAS (Glossacantha) DIFFERENS*, sp. n.

Shining; head and last four tergites black, the rest of the insect reddish yellow. Antennæ ferruginous, the first two segments and legs reddish yellow. Length 6.5 mm.

♂: size and build of *somaliensis* Cam, the antennæ similarly constructed but but differs in the colour of the abdomen the ♂ characters and the following respects; head with inter-antennal tubercle, the puncturation finer, the ground sculpture weaker, thorax with scarcely different puncturation but with a fine and distinct ground sculpture, elytra with distinct ground sculpture but with similar puncturation to that species the sculpture of the abdomen as in *somaliensis*: 3rd tergite produced backwards in the middle as a short broad lamella feebly emarginate in its whole width behind, its angles acute at each side with a long curved spine overlying the lateral margin and extending to the level of the posterior margin of the 4th tergite; a second spine arises from the inner aspect of the lateral margin of the 3rd tergite, it is curved and directed inwards towards the posterior angle of the median lamella and underlies the base of the principal spine; 5th and 6th tergites with median keels throughout, 7th with a few small tubercles; 8th with gently rounded posterior margin furnished with six little teeth, the median pair larger and closer together; 6th sternite a little produced and gently rounded.

SOMALIA: Arfa Mudugh Province—Alt. 1,500 feet. 6, 1944. (T. H. E. Jackson). Unique, Type in B.M.

VAR. *DEBILITATUS*, n.

In this ♂ variation the median plate and short inwardly directed spine of the 3rd tergite are less developed and the keels on the 5th and 6th are reduced to tubercles.

KENYA COLONY: Emali Range, Sultan Hamud—Alt. 4,900-5,900 ft. III 40, Makindu, 4, 37.

21. *ZYRAS (Glossacantha) LUCULENTUS*, sp. n.

Shining reddish yellow, the 5th, 6th and 7th tergites entirely or largely black, the whole insect without ground sculpture. Antennæ ferruginous, the first three segments and legs reddish yellow. Length 6 mm.

Head narrower than the thorax (3.5:4) without inter-antennal tubercle, very finely and very sparingly punctured. Antennæ with the 3rd segment twice as long as the 2nd, 4th to 10th moderately transverse, 11th a little longer than the 9th and 10th together. Thorax transverse (4:3.2), the sides gently rounded and retracted to the base, except for a pair of small punctures behind the middle and the two or three at the sides, practically impunctate. Elytra longer (4:3.2) and broader than the thorax, broader

than long (5:4) with a row of three or four small punctures on the disc and five or six at the sides, otherwise practically impunctate. Abdomen almost impunctate.

♂: 3rd tergite on each side with an arcuate spin within and parallel to the lateral margin and extending nearly to the posterior margin of the 4th: 7th at the base with a pair of larger pointed tubercles, the posterior margin rounded.

KENYA COLONY: Gilgil (D. G. MacInnes). Type ♂ 5, 40, Ngong 5, 40 ♀ (at light). Type in B.M.

22. *ZYRAS (Androdonia) VICTORIAE-NYANZAE*, Bernh.

The type is ♀. The ♂ characters are as follows: 3rd tergite with a curved spine within the lateral margin and not extending beyond the posterior margin of the 4th, 8th truncate with two little tubercles on the posterior margin.

KENYA COLONY: Nairobi—8.36. (A. F. J. Gedye). Type in B.M.

23. *ZYRAS (Androdonia) EMASCULATUS*, sp. n.

Moderately shining: head and elytra black, the shoulders more or less reddish; thorax red, abdomen with the raised sides and first two visible tergites red, the following black. Antennæ black, the first three segments and legs reddish yellow. Length 7 mm. In build colour and antennæ structure scarcely differing from *mirabilis* Bernh. but the head in both sexes is more shining and the inter-antennal tubercle more prominent, the punctures less numerous, the ground sculpture obviously weaker, thorax less finely and less obsoletely punctured and with distinct median impressed line; sculpture of elytra scarcely differing in the two species, the abdomen practically impunctate.

♂: head with the vertex broadly superficially impressed; 3rd tergite slightly but broadly produced and narrowed in the middle, its posterior margin emarginate in its whole width: 7th with a small tubercle in the middle in front of the posterior margin and a yet smaller one on each side of it: 8th with the posterior margin broadly feebly emarginate.

KENYA COLONY: N.W. Mau—Alt. 10,000 feet. Jan.-Feb. 1946 (Type). Thiba R. Camp, alt. 6,800 feet.

24. *ZYRAS (Parophthalmonia) ROTUNDICOLLIS*, sp. n.

Shining; head and abdomen black, the posterior margins of the tergites narrowly and obscurely rufescent, thorax and elytra reddish yellow. Antennæ brown, the first three segments and legs reddish yellow. Length 7 mm. z

More shining than *gravidula* Per., the abdomen darker in colour, the sides of the thorax more strongly rounded and with finer, more sparing puncturation, the elytra more sparingly and finely punctured, scarcely asperate, the ground sculpture throughout much weaker. Head finely and sparingly punctured. Antennæ with the 3rd segment longer than the 2nd, 4th to 10th all longer than broad, and decreasing in length. Thorax transverse (7.3:4.5), the sides evenly rounded with the base, broadly impressed, very finely moderately closely puncture. Elytra longer than the thorax (6.4.75) broader than long (8:6) very finely, scarcely asperately, moderately closely punctured. Abdomen finely and sparingly punctured. Differs from *diversicollis* Bernh. in the less transverse thorax with more strongly and evenly rounded sides and

finer puncturation, the elytra are less closely punctured and the ground sculpture throughout weaker, the whole insect more shining.

UGANDA: Bwamba—7/8, 1946. (V. G. L. Someren). Unique. ♂ unknown. Type in B.M.

25. *ZYRAS (Parophthalmonia) PECULIARIS*, sp. n.

Shining; head and elytra black, the humeral region and thorax reddish brown: abdomen pithy. Antennæ ferruginous. Legs reddish yellow. Length 8 mm.

♀: readily recognised by the colour and completely absence of ground sculpture. Head narrower than thorax (5:6.5), broadly smooth along the middle, at the sides with a few small punctures; eyes large. Antennæ long, the 3rd segment three times longer than the 2nd, 4th to 7th a little longer than broad, decreasing in length, 8th to 10th slightly transverse, all distinctly compressed and narrowed to their bases, 11th a little longer than the 9th and 10th together. Thorax transverse (6.75:4.5) narrower than the elytra, scarcely perceptibly impressed laterally, the sides gently rounded and retracted to the base, the posterior angles completely rounded, impunctate along the middle, elsewhere with small scattered punctures, the sides with long black setæ. Elytra longer (6:4.5) and broader than the thorax, broader than long (9:6) rather closely and much more coarsely punctured. Abdomen parallel, practically impunctate.

KENYA COLONY: N. W. Mau—Alt. 8-10,000 ft. 2, 1946. Unique. British Museum.

26. *ZYRAS (Parophthalmonia) MABIRANUS*, sp. n.

Very near *rotundicollis* Cam. of the same size and build, the thorax broader than the base of the elytra with similar strongly and evenly rounded sides, but more shining, the puncturation not so fine and rather closer: elytra more closely punctured, the punctures finer and somewhat asperate, finally the abdomen is yellowish red in colour and yet more sparingly punctured. Antennæ with the first four segments reddish yellow, the rest wanting. From *diversicollis* Bernh., it differs in the less fine and rougher puncturation of the thorax which is also shorter and more transverse with more evenly rounded sides, the puncturation of the elytra is as close but not quite so fine as in *diversicollis*. Length 7 mm.

UGANDA: Mabira For.—10, 37. (T. H. E. Jackson). A single. Type in B.M.

ZYRACANTHUS, gen. n.

Near *Myrmecusa* Wasm. but at once distinguished by the trapezoidal thorax somewhat like that of *Dorylocratus* Wasm., and shorter and less slender posterior tarsi. The maxillary palpi are similar to those of *Myrmecusa*. The setæ are longer and more numerous than in that genus. The mouth parts owing to lack of material cannot be satisfactorily examined.

27. *ZYRACANTHUS TURNERI*, sp. n.

♂: Moderately shining: head and abdomen black, the strongly elevated side margins of the latter reddish yellow. Thorax pithy all the margins narrowly, the anterior angles broadly reddish yellow. Elytra pithy, the suture narrowly, the base obscurely and indeterminate reddish. Antennæ black. Legs reddish yellow, the tibiae infuscate. Length 8 mm. Head transverse, narrower than the thorax, the eyes

large as long as the rounded post-ocular region; produced between the antennal tubercles narrowed and rounded in front; the punctures small and scattered, ground sculpture limited to the posterior region where it is fine and more or less transverse. Antennæ with the 1st segment long and stout, 2nd very small, 3rd to 7th all very long but decreasing in length (the rest wanting). Thorax transverse (7:5), the anterior border broadly and rather deeply emarginate, the anterior angles produced and rounded in front, the sides straight and strongly retracted to the rounded posterior angles, the sides broadly, the base narrowly sulcate, the disc convex with small scattered punctures as on the head, the sides impunctate; ground sculpture absent, the sides and anterior angles with numerous long and short black setæ. Elytra longer (6:5) and broader than the thorax, wider behind, broader than long (10:6) with small moderately close punctures larger than on the thorax, the sides with long black setæ; ground sculpture absent except at the sides and a along the posterior margin. Abdomen narrowed at base and apex, the sides gently rounded, finely, moderately closely punctured and with fine ground sculpture, rather long black setæ and shorter yellow pubescence.

HAB.:—

28. *AMAROCHARA* (*Lasiochara*) *GIGAS*, sp. n.

Shining black: antennæ black: the first two segments yellowish brown. Legs reddish yellow. Length 5.3 mm.

At once distinguished by its large size. Head orbicular, narrower than the thorax, the post-ocular region finely bordered below; eyes large, fully as long, impunctate along the middle, elsewhere with rather large scattered punctures. Antennæ stout, the 1st segment deeply emarginate at the apex, the 3rd segment as long as 2nd, this as long as the 1st, 4th as long as broad, 5th to 9th slightly transverse differing but little, the rest wanting. Thorax transverse (4:3.5), the sides gently rounded, slightly narrower in front than behind, the angles rounded, impunctate along the middle, elsewhere with similar but closer punctures than on the head. Elytra longer and broader than the thorax (4:3.5), broader than long (5.5:4), the punctures very similar. Abdomen slightly narrowed at the apex, the punctures finer and less close than on the elytra, but closer on the 7th tergite than on the preceding. The whole insect without ground sculpture, the pubescence yellow, moderate.

KENYA COLONY: Osiri, N. Kav.—5, 1934. (H. J. A. Turner). Unique. Type in B.M.

PARAMAROCHARA gen. n.

Closely allied to *Amarochara* Thoms. having similar antennæ sternal and tarsal structure, but at once distinguished by the anterior and middle tibiae being closely spinose and the posterior femora with a short tooth a little behind the apex internally and a much longer one nearer the middle of the inner border. The temples are finely bordered posteriorly. The maxillary palpi are longer than in *Amarochara*, the 3rd segment much longer and but little thickened towards apex, the 4th very short and pointed. I am unable to see the structure of the tongue etc., the specimen being unique.

29. *PARAMAROCHARA* *MONTANA*, sp. n.

Shining, head and thorax dark reddish brown, the elytra and abdomen black, the former rufescent at the base, Antennæ black, the first three segments reddish yellow, the first of three more or less impunctate. Legs reddish yellow. Length 4.2 mm.

Head orbicular, a little narrower than the thorax, the eyes distinctly shorter than the post-ocular region, impunctate along the middle, elsewhere with small, moderately closely punctures. Antennae stout, the 1st segment deeply emarginate at apex, a little shorter than the 2nd, 3rd shorter than 2nd, 4th to 10th transverse, 5th to 10th differing but little, a half broader than long, 11th a little longer than the 9th and 10th together. Thorax as long as broad, the sides gently rounded in front, straighter and slightly retracted behind, the angles rounded, the punctures much like those of the head but closer and uniformly distributed. Elytra as long as but broader than the thorax, broader than long (3.5:2.5), the sculpture similar. Abdomen parallel, only very slightly narrowed at apex, more closely and coarsely, somewhat roughly punctured on the 3rd to 5th tergites in the impressions, more finely and less closely elsewhere. The whole insect without ground sculpture, the pubescence yellow, moderate, longer on the abdomen.

KENYA COLONY: Emali Range, Sultan Hamud—Alt. 4,900-5,900 feet. 3, 40. Unique. British Museum.

30. **ALEOCHARA (Baryodma) TURNERI**, sp. n.

Entirely black, moderately shining. Antennae black. Legs reddish yellow, the femora and tibiae slightly infusate. Length 5 mm.

In general appearance much like *bohemani* (B. and S.) but the antennae longer and entirely black, thorax shorter and broader, more transverse, less finely punctured, elytra more coarsely and roughly punctured, abdomen much more densely punctured. Head moderately finely closely punctured. Antennae with the 3rd segment as long as 2nd, 4th to 7th a little longer than broad decreasing in length, 8th to 10th slightly transverse, 11th as long as the 9th and 10th together. Thorax transverse (5.5:4) closely punctured like the head. Mesosternum carinate. Elytra as long as the thorax, a little broader, closely, rather coarsely and roughly punctured. Abdomen very closely, punctured much as in *intricata* Mannh.

KENYA COLONY: Londiani—May 1936. (H. J. A. Turner). Type in B.M.

31. **ALEOCHARA (Polychara) AFRICANA**, sp. n.

Entirely black: head, thorax and abdomen more shining than the elytra. Antennae black, the first two segments and apex of the last brownish yellow. Legs reddish yellow, the middle and posterior tibiae infusate. Length 7 mm. Larger and more robust than *lanuginosa* Gr. less shining, the antennae longer and stouter, the head more finely and sparingly punctured; antennae with the 3rd segment a little longer than the 2nd, 4th a little longer than broad, 5th to 10th transverse, about a half broader than long, 11th as long as the 9th and 10th together. Thorax with sculpture much like that of *lanuginosa*. Mesosternum keeled. Elytra with rather close and distinctly asperate puncturation, not emarginate postero-externally. Abdomen more finely punctured than in *lanuginosa*, especially in the basal impressions. Ground sculpture absent. Rubescence yellow, rather long, much as in *lanuginosa*.

UGANDA: Kalinzu For.—10, 37. (T. H. E. Jackson). Unique. British Museum.

32. **ALEOCHARA (Polychara) JACKSONI**, sp. n.

Shining; head and abdomen black, the first four visible tergites narrowly, the 5th more broadly, the 6th entirely, reddish yellow: thorax and elytra dark reddish brown. Antennae reddish, the first three and 11th segments reddish yellow. Legs reddish yellow. Length 6 mm.

Somewhat resembling *fumata* Gr. in build, but with longer, less transverse thorax; the puncturation and pubescence of the head and thorax is very similar to that of *fumata*, but the puncturation of the elytra is distinctly coarser than in that species, the antennæ a little longer and more slender. Head a little widened behind, finely and sparingly punctured. Antennæ with the 4th segment a little longer than broad, 5th to 10th moderately transverse, 11th nearly as long as the three preceding together. Thorax broader than long (4:3), rather strongly narrowed towards the front. Mesosternum carinate. Elytra as long as, and a little broader than the thorax, not emarginate postero-externally. Abdomen narrowed towards apex, rather more closely and less finely punctured than in *fumata*. The whole insect without ground sculpture, the pubescence yellow, rather close.

UGANDA: Kalinzu For.—10, 37. (T. H. E. Jackson). Unique. British Museum.

MISCELLANEOUS NOTES.

The Editor should like to encourage Readers of the East Africa Natural History Journal to send in nature notes and short accounts of interesting observations for inclusion among the 'Miscellaneous Notes'.

NOTES ON THE NESTING OF THE HADADA, HAGEDASHIA HAGEDASH
ERLANGERI NEUM.

Having constructed a small pond in my garden near Ngobit, I was very interested to find a couple of Hadadas nesting nearby soon afterwards. They hatched 2 chicks in September, of which one was killed after leaving the nest. The birds returned in March, and for a week or so were busy building up the old nest, but finally left it without breeding. In September they built a new nest near the old one, using materials from the old nest. On September 22nd the hen started sitting. On October 16th 2 chicks were hatched. On November 15th the young birds left the nest, the parents showing signs of great agitation. The young birds remained in the tree and returned to the nest at night. They were seen flying with both parents about a week later. In March of the following year the nest used in September was built up again, and 2 chicks were hatched and reared.

F. B. GOUGH,
P.O. Nanyuki.

[Editor's Note: According to Jackson and Sclater ('The Birds of Kenya Colony and the Uganda Protectorate', Vol. I, page 84), the Nile Valley Hadada, *H. h. nilotica* Neum. breeds in May and June and in September and October. Sir Charles Belcher ('The Birds of Nyasaland') mentions finding a nest in November. Hadadas' nests may be found on low bushes over-hanging the water, but also in trees or even on top of candelabra suphosbias. The clutch consists of three eggs, which are pale brownish to buffy-white, marked with reddish-brown streaks and splotches. Mr. Gough's interesting notes on the nesting habits of the eastern race seems to indicate that quite often only two chicks are hatched and reared. Further observations, accompanied by exact data on the position of the nest, the size of the clutch and the time of incubation would be very welcome].

A BRIEF NOTE ON SOME BIRDS SEEN AROUND MALINDI 9-18/12/50

Larus hemprichii

Visit were made to various points on the coast within 20 miles of Malindi and **this**, and other gulls were found to have a very limited distribution. No gulls were seen at Ngomeni, Mamburi or the Blue Lagoon, but only along the stretch of coast between Casuarina Point and the Sabaki river, and on the Malindi bandari. I am not certain where they roosted, possibly at Casuarina Point where a flock of 60 birds was seen resting on the shore at high tide on the evening of the 12th, or possibly at Malindi itself. Each morning a number of birds passed along the Malindi front, flying Northwards to the Sabaki river where they scavenged during the day on refuse swept down by the flooded river, returning to Malindi or Casuarina Point in the evening. But the majority of birds were to be found at Malindi itself scavenging on refuse and the guttings of fish, etc. and resting on the reef at low tide.

About half of the 100 or so birds seen were in immature plumage. It was noted that in addition to plumage differences immature birds are without the red spot on the bill.

Larus fuscus

About half a dozen Lesser Black Backs were seen with the Hemprich's gulls and had the same daily movements. Both adult and immature birds were seen.

Larus ridibundus

A single bird believed to be a Black-headed Gull was seen on two occasions, once at the Sabaki river and once on the reef outside Malindi. It had the typical wing pattern, dusky red bill and legs, dark iris and dusky spot on the ear coverts of this gull in winter plumage, and was slightly smaller than Hemprich's gull. If the identification is correct this is a new record for Kenya, and it can be classed as a rare migrant from the North during the European winter. A similar bird was seen by me once before, at Malindi in March 1949, only differing in being still in late immature plumage.

Sterna bengalensis and *Sterna bergii*.

A flock of about 500 Lesser Crested and a dozen Greater Crested Terns appeared to be based on Malindi, resting on the reef outside the town during the heat of the day and presumed to be fishing over the open sea well outside the reef during the cooler morning and evening. It was not discovered where they roosted if at all, or what their movements are when high tide falls during the middle of the day; the latter condition was not observed during my visit.

This large flock was carefully inspected for terns of other species, but none were seen.

Gelochelidon nilotica

The Gull-billed Tern frequents sheltered bays rather than the open coasts, and was seen at Ngomeni—a single bird—and Mida—about a dozen birds, resting on the exposed mud and hawking over the shallow water of the bay and pools on the mud-banks.

Phoenicopterus ruber

About 150 Greater Flamingo were present in Mida Bay, this being a larger number than I saw there at any time in 1949. A number of Flamingo appear to be present at Mida at all times of the year and are occasionally seen at other points on the coast.

Dromas ardeola

An uncommon bird on the coast South of Lamu, one was seen at Malindi and a flock of about 60 birds at Ngomeni.

Wader

The principal centres for waders near Malindi, where large numbers can usually be seen, are in the sheltered bays and along the edge of the mangrove swamps at Ngomeni and Mida, although waders in limited numbers can be found in small parties along most stretches of the coast.

The locally resident Little White-fronted Plover is, of course, an exception, being practically confined to the sea shore particularly the sandy stretches of coast backed by sandhills between Malindi and Ras Ngome.


Most of the migratory waders were seen, including fair numbers of Terek Sandpiper at Mida and several Marsh Sandpiper at the mouth of the Sabaki river. The

latter does not appear to be common met with on the Coast. There was no sign, however, of Godwit at Mida where I was lucky to see 4 Bar-tailed Godwit in 1949.

J. SMART.

THE SAW-SCALED VIPER IN KENYA.

Professor Toschi (1948, Journ. E.A. Nat. Hist. Soc., 19, p. 134 (1946)) is mistaken in supposing that this viper was first taken in Kenya in 1943 by members of the Coryndon Museum staff. He is correct in saying that it was unknown from Kenya when my Check List of Reptilia (now hopelessly out of date) was published in 1924. However, five years later, when reporting on East African Reptiles and Amphibians in the United States National Museum (1929, U.S. Nat. Mus. Bull. 151, p. 39), I recorded it from the Northern Uaso Nyiro, Lake Rudolf, and Dussia, to the south-east of Lake Rudolf. Actually these four snakes had been collected as long ago as 1912 by members of the Theodore Roosevelt Expedition.

 More recently Bogert (1940, Bull. Amer. Mus. Nat. Hist., 77, p. 102) recorded this species from Garissa where it had been taken in 1933 by Davison and Johnson. Both Bulletins are, or should be, in the Library of the Coryndon Museum.

As shown by Constable (1949), Bull. Mus. Comp. Zool., 103, p. 155) the correct name for the Kenya race of saw-scaled viper is *Echis carinatus pyramidum* (Geoffroy), described from Egypt but ranging eastwards through Arabia and Northern India till it meets with the typical form from Arni (type locality of *carinatus*) and Madras.

ARTHUR LOVERIDGE,

Museum of Comparative Zoology,

Cambridge 38, Massachusetts.

July 1st, 1950.

REVIEWS

MANY HAPPY DAYS I'VE SQUANDERED. By Arthur Loveridge. London: Robert Hale Ltd. 1949. Illustrated.

Mr. Arthur Loveridge, for many years a faithful contributor to the East African Natural History Journal, is the world's greatest authority on East African reptiles and amphibians, and his many scientific papers are well known to all students of African Natural History. He has now written a book in a more popular vein, telling us how he became a naturalist already as a small boy ("Born with a butterfly net in one hand, a killing bottle in the other"), how he started collecting back home in Wales, and how he came to East Africa in 1914, to become the curator of the East Africa and Uganda Natural History Society's Museum in Nairobi, out of which grew the Coryndon Museum. During the first World War, Mr. Loveridge served in Tanganyika pursuits. After leaving the army he became an assistant game warden in Tanganyika, and finally went to the U.S.A. to take up an appointment at the Harvard Museum of Comparative Zoology, where he is now Curator of Reptiles and Amphibians. Mr. Loveridge's book is packed with interesting information, not only on snakes, lizards and tortoises, but on birds, mammals and insects as well. He kept alive and studied at close quarters many rarely seen creatures and made careful notes on their habits. The Big Game enthusiast will find accounts of encounters with leopards and man-eating lions. "Many Happy Days I've Squandered" is a delightful book, and should find its place on the shelf of every person interested in the Wild Life of "that naturalist's paradise"—Eastern Africa. The Publishers promise another similar book from Mr. Loveridge's pen, and perhaps we may also hope that one day he will present us with a detailed work on East African reptiles and amphibians, a work which would be extremely welcome to field naturalists!

C.A.W.G.

BUTTERFLIES OF RHODESIA. With a short introduction to the Insect World. By E. C. G. Pinhey, B.Sc. (Lond.) Salisbury. Published by the Rhodesia Scientific Association, 1949.

Butterfly collectors will most enthusiastically welcome Mr. Pinhey's book for though dealing with the butterflies of Rhodesia, it is also of greatest value to Lepidopterists residing in one of the East African Territories. The introductory chapters deal with the structure of butterflies, with their organs of special sense, their life history, and with such fascinating subjects as variation, protective colouration and migration. There are valuable hints to collectors, a summary of some family characteristic, and a very good key to the families of Rhodesian butterflies, which deals with adults, larvæ and pupæ. All of the over 450 species of butterflies known to occur in Rhodesia are listed, and of one third of them concise descriptions and short notes on their habits and distribution will be found. Where the larvæ is known, a short description is given. Time-tables for the species described, and tables giving the food plants of caterpillars are of especial value. The book contains 15 very fine coloured plates, painted by the author, and 6 black-and-white plates, taken from photographs, as well as many text figures. There is a glossary of scientific terms, a list of abbreviations of authors' names, a short bibliography, and an index. Altogether Mr. Pinhey, who is now Entomologist at the Coryndon Museum, has given us a book which will prove to be most useful both to the beginner and to the advanced collector.

C.A.W.G.

FIFTY-TWO KENYA TREES AND HOW TO RECONISE THEM. By R. Fane.
East African Standard. 2/50.

This is not a book for the experts; but a beginner like myself can get a good half-crown's worth of fun and interest out of it. In the introduction Mrs. Fane disclaims having written it, and led me to expect that she had more or less copied the text from Battiscombe. This is far from being the case. No doubt she is indebted to Battiscombe, as everyone is who is interested in East African trees; but she has rewritten the notes in her own words and added points to help identification. And there are a few—alas! very few—excellent photographs. It is useless to notice a tree and look for it in this book. The odds are too great that it will not be there. The best thing to do is to go through it and see how many you already know and how many you can immediately recall, and determine to look out for the others. As thus—"II—Trees of the Nairobi District— . . . *Erythrina*" yes. "*Markhamia*", yes. "*Craibia*?" Why, that must be the one that was in flower when we picnicked in Langata Forest. "*Brachylaena*?" I don't know that at all. Said to be "very typical of the forests round Nairobi." "I must look out for it." By the time you know all 52, you will have begun to notice things, and be on the look-out for the handbook of trees for which Mrs. Fane realises that there is a wide demand. Could not the Arbor Society undertake it? And meantime a reprint of Battiscombe's book is surely due.

There is a useful glossary of botanical terms, and the nomenclature is interesting. Vernacular, Latin and (where they exist) English names are given, and in the list of most used names an odd jumble occurs of all three. This is how a live nomenclature grow up, not by somebody thinking it would be nice to call *Craterostigma* "Kenya Violet" and other people objecting. Trees evidently have to be talked about more than flowers.

P. ALLEN.



East Africa Natural History Society

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The Society is prepared to consider articles dealing with Natural History for publication in the Journal. The articles should be concise and should be typed on one side of the paper only.

In accordance with the accepted practice scientific names are printed in italics. These should be underlined in the typescript. Names of new species described in an article when mentioned are printed in bold face. Such names should be underlined with an interrupted line.

It will be appreciated if references to literature are typewritten in the form customary in English scientific periodicals. Each reference to a periodical should begin with the writer's name and the reference should be arranged in alphabetical order. The name is followed by the initials and then the year of publication. The name of the journal should be given next in italics, followed by the volume number in bold face and the page in roman. Standard abbreviations for the names of most journals are available and should be adopted when possible.

References to text-books should be similar in form to those for journals; but after the title of the book, volume number and page, the place of publication and publisher's name should be given.

The following examples illustrate these points:

Evans, R.T., 1947. *F. East Africa Nat. Hist. Soc.*, 19, 18.

Jackson, F. J., 1938. *The Birds of Kenya Colony and Uganda Protectorate*, 3, 1261. London, Gurney & Jackson.

In the text, references should be made to the bibliography by giving the author's name and the date in brackets, not by numbers or footnotes.

Illustrations should be in a form suitable for reproduction. The Editor cannot be expected to redraw. Black and white illustrations should be in Indian ink on Bristol board or thick white paper. If drawn larger than it is intended that they should appear, reproduction is usually better. An indication of the degree of reduction is advisable. Photographs should be printed on glossy paper and should be the size of intended reproduction.

Articles should be submitted to the Secretary, P.O. Box 658, Nairobi, for consideration by the Committee. The Committee reserve the right to reject papers that it considers unsuitable. Authors may be asked to pay part of the cost of making blocks if the number of illustrations is large. The writer of an article is entitled to twenty-five offprints free of charge. Larger numbers can be supplied at cost if ordered when the article is submitted.

BACK NUMBERS OF THE JOURNAL

The Committee is very anxious to obtain various back numbers of the Journal which are either in short supply or out of print. These are required for exchange purposes with scientific institutions or societies overseas, and if any members have back numbers which they would be willing to dispose of in this way, would they please notify the Hon. Secretary, P.O. Box 658, Nairobi. The numbers wanted in particular are:—Nos. 1-7, 9-13, 15, 16, 38/39, 45, 47, Vol. 12 Nos. 3/4, 75/76, 81/82, 83/84.

* THE BIRDS OF KENYA AND UGANDA. By V. G. L. Van Someren.

THE BUTTERFLIES OF KENYA AND UGANDA.

By V. G. L. van Someren and collaborators

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Journal of the East Africa Natural History Society

December, 1952

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Nos. 2(92)

SOME FIELD NOTES ON THE BIRDS OF MOGADISHU

By B. G. Lynn-Allen.

These notes are a record of birds seen in the Mogadishu area from mid-October until the end of March. All the species mentioned were seen on the shore, or on the maritime sand-dunes a few hundred yards from it: no attempt has been made to include the numerous varieties existing in thorn scrub a mile or so inland. The great majority of observations were made within two and a half miles of the town itself: an excellent reef (uncovered at low tide), some miles south of Mogadishu was visited about a dozen times: a single trip was made to Gezira, about fifteen miles farther south: and a morning and evening were spent at Brava, some 110 miles down the coast. About a hundred afternoons or evenings were spent watching these shore birds. It is hoped that these rough notes may prove of interest in giving some indication of the incidence of the various maritime species which occur on this part of the Somalia coast during the European winter.

1. Reef Heron (*Demigretta schistacea*)

Seen continuously and regularly between October and March. White and dark forms observed; worked out in the rough proportion of two to one. Several times a white Reef-Heron was seen flying with an apparently smaller brown one. Never observed further inland than a few yards from the water's edge. (Probably immature examples).

2. Grey Heron (*Ardea c. cinerea*)

Single birds seen regularly throughout the season.

3. Night Heron (*N.n.nycticorax*)

One only observed, on March 23. The bright orange-yellow legs were most conspicuous in flight. This bird was seen on the rocky fore-shore and allowed a close approach.

4. Abdim's Stork (*S.abdimii*)

A large flock of thirty or forty birds seen on the maritime plain some few miles outside Mogadishu on Feb. 20 and Feb. 23.

5. Greater Flamingo (*P.r.antiquorum*)

Three specimens, presumably of this species, were seen in the dam of a salt-works at Gezira on November 3.

6. Osprey (*P.h.haliaetus*)

First seen on October 28. From then onwards Osprey were observed on most days right up to the end of March. Twice, one was seen carrying

a fish of 1 lb to 1½ lbs, held lengthways in the talons; on both occasions the Osprey was uttering "a chirping mew" as it passed overhead. The following are a few notes on the dive:—

"December 20—a wonderful exhibition of diving, about five dives in half an hour; but saw nothing caught. The bird beat slowly up against the wind, hovering like a huge Kestrel. The dive starts in a steep slant and then becomes a straight plummet drop. The wings are kept open for at least three-quarters of the descent, and occasionally seemed to stay open until the surface was struck. At other times they were shut considerably before the water was reached. The time under the surface was 2—3 seconds. Immediately it was clear of the water the Osprey shook itself vigorously, giving several more shakes when it was up in the air: very reminiscent of a dog and most interesting to watch. This bird seemed to be able to dive with impunity in very few feet of water".

It was most noticeable how the small waders completely disregarded Ospreys. Occasionally one of the latter would rest at water's edge on the bare sand, and Ringed Plover, and such like, would scuttle about unconcernedly within a yard or so of it. Again, when an Osprey sailed low overhead, they would pay no attention whatsoever. From time to time older birds with very white heads would be seen. The normal distribution seemed to be a pair to every two or three miles of coast. I never saw more than two in the air at any one time.

7. *Arabian Kite (M.migrans arabicus)*

Ubiquitous over the town and harbour, but never noticed away from human habitations. I had eye-witnessed accounts of this species swooping down on the shallow water of the harbour and seizing small fish; but I never saw this myself.

8. *European (?) Kestrel (F.t.tinnunculus)*. (Probably *Falco rupicoloides fieldi*).

Seen on ten occasions and always in the same locality from December onwards. The female was usually the bird noted; but a browner and smaller male was twice seen in the air at the same time. The female was a very rich tawny-red, copiously spotted with blackish on the wing-coverts and underparts; the thighs were rufous and there seemed to be a single black bar across the tail. I never succeeded in confirming the colour of the claws. A large sized Kestrel, which "worked" the sand dunes assiduously. No kill was observed.

9. *Siberian Ringed Plover (C.h.tundrae)*.

Very common, either singly or in small flocks. At high tide retired to the sand dunes, where it rested in parties of 20 or 25. Seen every day on the shore, from October 11 until the end of March.

10. *Lesser Ringed Plover (C.d.curonicus)*.

A pair seen on January 14 and on February 4, and single birds on January 27 and 29. The white collar very pronounced, but the black ring on the front of the neck somewhat inconspicuous, and the head and neck markings in general less bold. Upper parts browner than in better-known bird. The legs were lemon rather than orange-yellow; but the only sure field identifications seem to be the smaller length and bulk when seen side by side with the larger species, and above all, the total lack of

a white wing-bar which is to be noted in flight. When flushed, uttered a single note, thinner and quieter than that of the commoner bird.

11. *White-Fronted Sand-Plover* (*C.m.tenellus*).

Seen practically every day on the shore or on the dunes when the tide was high. Very confiding. Its little sideways runs were a noticeable characteristic. Some birds were paired in late March.

12. *Crab-Plover* (*D. ardeola*).

Seen twice in late October and twice in November, but not again during the season. Six were seen together on October 27. An old bird and a juvenile were observed in company on November 4 and November 22. The young bird had the crown and upper parts grey-brown, and not black, and the legs a very dark grey. The first adult seen (October 24) flew low over the crests of the waves like a petrel.

13. *Grey Plover* (*S.s.squatarola*).

Two or three observed on October 26 with breasts still dark. (The Grey Plover is one of the last of the waders to moult its summer plumage. Ed.) Thence onwards seen regularly throughout the winter in numbers: still in residence at the end of March, when breasts were again darkening. In a rising tide Grey Plover would sometimes stay on the reef until the water reached their bellies. Never seen more than 30-40 yards inland.

14. *Great Sand-Plover* (*C.leschenaulti*).

First seen on November 4, and from then on practically every day until the end of March. In the field can only be distinguished from the next two species by its larger size, longer legs, and longer and thicker bill. Always appeared in very small parties, from one to three. On November 19 I watched one attack a small crab, pursuing it backwards and forwards for some time. The crab showed some fight, but was never allowed to reach the safety of its burrow. Finally it was worn down, dismembered and eaten. At Brava on January 25, I saw a Sand-Plover with one leg completely missing, it was plump and very active. In the last week in March, two individuals were seen with the nape and chest-band becoming very chestnut. Sand-Plovers were frequently somewhat truculent towards the other small waders.

15. *Caspian Plover* (*C.a.asiaticus*).

West Mongolian Sand-Dotterel (*C.m.atrifrons*).

I place these two species together as I found they were difficult to identify in the field. Consequently I was never certain which I was watching. On December 9 what proved to be a Sand-Dotterel was accidentally shot by a stray pellet, aimed at a Grey Plover, flying low. (The bill was about 16 mm. there were ill-pronounced traces of a brown chest-band and the upper tail-coverts were edged with white). One or other of the two species was seen continuously from early November to late March. At high tide these birds resorted to the dunes, together with Ringed, White-Fronted, Kentish and Kittlitz Plovers.

16. *Kittlitz Sand-Plover* (*C.p.pecuarius*).

As a resident species, was seen throughout the season, and could be noted in parties up to 15-20 on any day on which its favoured haunts

were visited. This is a bird of the maritime sand-dunes, and not of the shore: out of several dozen appearances, I have only three records of seeing one on the beach itself. Two were first noticed as being definitely paired on March 14, and on March 27 the nest was found. The female had then been sitting for several days. The nest was cunningly sited on top of a sand-bank, and surrounded by stones and loose rubbish. These not only helped to hide the sitting bird, but also constituted a site where Somali sheep were unlikely to trample the eggs. There were two, very large for the owner and highly pyriform. They were densely obscured with dark yellowish-green markings and a few black lines. The female was amazingly deft and quick in covering her eggs with sand on my approach.

17. *Kentish Plover (C.alexandrinus subsp.)*

Probably seen in October, but passed unrecognised. Noted regularly in all months from early November to late March; generally only a pair or so seen in any one day. At first I found these Kentish Plover somewhat hard to pick out from Caspian Plover or Sand-Dotterels. I think the best field identifications are the blackish legs (the two other species named have greyish legs), and the dark lines ("collar ends") on each side of the chest. In autumn and spring the crown was noticeably rufous—as usual accentuated when viewed in a strong light. These Somalia Kentish Plover may have been European migrants or of the local Indian Ocean race.

18. *Eastern Golden Plover (C.d.fulvus).*

Three identified during winter, one of which was shot. I saw a single bird in the same area on December 28, 30 and 31. This was on the shore itself. In the field it resembled a slightly smaller Grey Plover, except for the complete lack of white on the rump and the suffusion of light brown on the chest and upper breast. My own experience, with all three birds, was that even with glasses the gold spangling was invisible from 40 yards. On March 2 a pair were seen on the sand-dunes within 100 yards of the sea: I flushed them several times (I was without a gun) and on one occasion they settled at the very edge of the water. M.E.W. North obtained what was probably one of these birds when he shot a Golden Plover in the same area the following morning, March 3. This was definitely of the Eastern race, with dark axillaries and in very handsome spring plumage, the gold spangling very bright. The call on being risen is disyllabic TER-WEET. In the field I would give the following five distinctions from the Grey Plover:—

- (a) Slightly smaller size.
- (b) Wings more cut-back.
- (c) Whole upper surface dark—the lack of any white on the lower back is very noticeable on the wing.
- (d) Fore under-parts suffused greyish-brown rather than whitish.
- (e) In general colouration, the bird appears medium to dark brown rather than grey-brown.

19. *Crowned Lapwing* (*S.coronatus*).

A small party seen at the African Cemetery on the out-skirts of the town on February 25. They were presumably residents there.

20. *Eastern Curlew* (*N. a. lineatus*).

First seen on October 20, thence regularly throughout the winter. Specimens shot on November 13 and March 24: in both cases the bill was 162 mm. and the axillaries unbarred white. In living birds which were observed the length of the bill seemed to vary a great deal. On January 28 and 30 and February 7 a solitary Curlew, apparently of appreciably smaller size, was noted. (Possibly *N.a.suschkini*?) At high tide Curlew stayed on the sea-front or else flew inland on to the sand-dunes. Flights of up to 25 were sometimes seen. The call seemed indistinguishable from the European race. In a falling tide their long legs enabled them to share with the Reef Herons the opportunity of entering the smooth water above a submerged reef, some time before the other waders. Generally wary, as is the custom with Curlew, but could be approached from behind sand-dunes to within close range. Still present in the last week in March.

21. *Whimbrel* (*N.p.phacopus*).

Seen throughout from mid-October until the end of March. Lower mandible pinkish on basal half, as with Curlew. High "tittering" call. Never observed away from the shore. One was seen disinterring a crab of about 3" across from a mound of wet sea weed, and carrying it off in its bill when disturbed. A common species, seen on most days.

22. *Common Sandpiper* (*A.hypoleucos*).

Very common. Seen practically every day throughout the season; but never more than a few yards from the edge of the sea. Occurred singly, in twos, or threes: was most partial to the coral cliffs. Constantly on the move (even at high tide), and very confiding. One was seen catching small crabs.

23. *Curlew-Sandpiper* (*C.testacea*).

The first (four) were seen on October 28: from then on it appeared regularly in good numbers. Still resident at the end of March. On March 10 M.E.W.North noted one already with a lot of red on its neck. Very restless little birds at all times.

24. *Terek Sandpiper* (*T.cinerea*).

The first (a lone bird) seen on November 1: another one observed on November 3: and two (possibly the same pair) on November 13, 25, and December 9. No others were noted until February 24, when two or three were seen. Finally, a singleton observed on March 10. The brown bill, very long and slightly recurved, and the bright-coloured legs, make this Sandpiper very conspicuous amongst other waders. The legs are a deep orange-yellow; but in certain lights appear to be red. This is an extremely active species, tirelessly working the shallow pools (and covering a lot of ground in doing so), seemingly with never a pause for rest or for taking stock of its surroundings.

25. *Turnstone (A.i.interpres)*.

First seen on October 25. The following day about a dozen were noted, at least one with pronounced chestnut streaking on the back, and still with the full black chest band of summer. Most had only a straggling black bar across the chest. In flight the black and white streaks on the back are invariably conspicuous. A very confiding variety, which was never seen away from rocks or water's edge. When scrabbling in piled-up sea-weed, presumably for sandhoppers, these birds are most amusing to watch, tossing over lumps of weed with a sideways motion of the head, for all the world like hay-makers. This species appeared regularly throughout the season in some strength.

26. *Greenshank (T.nebularia)*.

Two or three seen on October 27 and odd ones observed until mid-November. No others were noted on the coast until January 30, when they were seen in larger numbers; they were still numerous at the end of March. (N.B. During November and December the seasonal swamps from the Webi Shebelli, some 20 miles inland, where there were a lot of Greenshanks, were at their best).

27. *Bar-tailed Godwit (L.l.lapponica)*.

A single bird seen on October 23, and from then on Godwits were seen regularly throughout the season. In their most favoured haunt, the reef at Warego, six to twelve were usually observed during a visit there. Seemingly a voracious feeder, "shovelling" continuously in shallow sand-pools with the slightly upturned beak. At such times they became very engrossed and paid little attention to a human approach in the open. Two were shot on October 27, and as this bird appears to be regarded as uncommon on the coast of Kenya, a feather-description is attached as an Appendix. Godwits were carefully scrutinised for the presence of any Black-tailed; but only Bar-tailed were seen.

28. *Oyster-Catcher (H.o.ostralegus)*.

Appeared quite indistinguishable in the field from Oyster-Catchers in Great Britain. A pair seen on October 27 and also on November 1: thereafter one only was seen regularly in the same locality throughout the winter.

29. *Sanderling (C.alba)*.

Present in large numbers. First seen (four) on October 26: still in residence in last week in March. On October 31, a few still retained patches of warm chestnut on the head and neck. From early February onwards, many tended to pack in "trips" of two hundred or so. This species tirelessly active when feeding at water's edge, and very tame.

30. *Little Stint (C.minuta)*.

Only two identified throughout the winter. One on November 12 and one on November 26. This is an even smaller wader than the white-Fronted Sand Plover. The very tiny size and the dark brown back with the feathers shafted with black, form field-characteristics which materially help in picking out this minute wader. Both birds which

were seen were very tame, and fed unconcernedly within a few yards of me.

31. *Jubaland Courser (C.c.littoralis)*.

A single bird seen (and shot for M.E.W.North) on February 7. Two other singletons seen on March 2 and March 24. On March 21 a pair were observed. All these appeared on the sand dunes adjoining the shore.

32. *Sooty (or Hemprich's) Gull (L.lemprichii)*.

Seen every day in mid-October, but only once in November, (the 25th) and not again until February 24 when a single bird was observed, mixed up with a flock of Red Sea Swift Terns. Another singleton was seen on March 31. During a night's stay at Brava, several dozen were in evidence. This was in late January.

33. *Lesser Black-Backed Gull (L.f.fuscus)*.

Only two seen during the season. Both solitary. The first was on November 26 and appeared to be entering its third winter. The crown, upper parts and chest were streaked with brownish, but the lower under parts were pure white. Primaries tipped with black or dark brown, without "mirrors". The eye was dark brown and so was the bill. Legs were fleshy. A second gull was seen at Brava on January 26. Although not fully mature, this was an older bird with the upper parts appreciably darker, but again no "mirrors" were visible on the outer primaries. It may well have been approaching its fourth year.

34. *Red-Sea Swift Tern (S.b.velox)*.

Several dozen of these very large terns were first seen at Brava on January 25 and 26. Subsequently I saw about two dozen on the reef at Warego (outside Mogadishu) on some six occasions between the end of January and March 24. When not feeding they tended to pack at water's edge, and would allow approach to within 50 or 60 yards.

35. *Grey-Headed Kingfisher (H.l.leucocephala)*.

Presumed to be of the typical race. Seen on one or two occasions in the town itself, generally at, or near the bathing-pool in Government House garden. Appeared perfectly at ease in its urban surroundings.

36. *Somalia Thekla Lark (G.t.elliotti)*.

I am postulating these birds as belonging to the above species on the grounds that their accepted range seems more likely to include the Somalia coast-line than does that of the Somali Crested Lark (*G.cristata* the former, making identification based on appearance alone practically *somaliensis*). On the other hand, the only field distinction between the two species seems to be a general more pinkish tone in the plumage of the former, making identification based on appearance alone practically impossible. The birds seen were certainly somewhat of a warm shade, and the balance seems to tend towards their being Thekla Larks. In the strong light their legs appeared of a very bright flesh-orange colour. A pair were seen five times in the same locality: first noted on December 11, and last seen on February 19.

37. ?? Lark.

A small party of unidentified larks of a non-crested variety were seen on February 5, 19, and March 12. In the field presented a most neutral appearance, with an entire lack of outstanding characteristics. About the same size as the last mentioned. Appeared to resemble descriptions of the Masai Fawn-Coloured Lark (*M.a.intercedens*).

38. East African Sparrow-Lark (*E.l.madaraszi*).

Seen in small parties on the sand dunes about ten times between December 5 and March 21. Extremely tame little birds, which could be approached to within 10 yards. Weak, "bouncing" flight.

39. Chestnut-Headed Sparrow-Lark (*E.signata*).

Seen once only — a little group of two or three on November 14. Two males with dark chestnut crowns were noted; but white coronal patch was not observed. These confiding little birds were found squatting in a sand-hollow, within a few yards of a bathing-hut on the "Lido".

40. White Wagtail (*M.alba* — race unknown).

Seen on eight or nine occasions between November and mid-February. All these occurrences were in the town itself. Only one was seen in the vicinity of water.

41. Yellow Wagtail (*B.v.lutens*).

Seen on eight occasions between January 18 and March 12. Generally observed in threes or fours briskly pattering round a flock of Somali sheep and goats and feeding on insects. It was most noticeable how close they stayed to the grazing animals, and how completely the latter ignored them, even when the wagtails were within a few inches of their eyes.

42. Pipit (??).

A very small pipit of about $4\frac{1}{2}$ inches in length which I failed to identify. Generally seen in a party of four or so, though on March 21 (the last time met with) two seemed to be definitely paired. These tiny pipits were met on a dozen occasions from December 5 onwards. The head and all the upper parts bore heavy streaks (or lines of spots) of black on a background of medium-brown. The throat was similarly striped, but the chin may have been paler unmarked. The fore under parts were likewise streaked, these markings continuing well down on to the breast; but the belly was uniform paler brown. There was a whitish eye-brow, or eye-streak; a slightly darker uniform patch on the middle of the back; and no white visible on the tail. The primaries appeared to be a lighter brown. Bill horn-brown: legs fleshy. The flight was low and very undulating. Although these little birds were fairly tame, their natural colouring, and tiny size, and (particularly) their restless and active behaviour on the ground, made them a difficult study for accurate scrutiny. Always found on the maritime sand-dunes in very low grass.

43. Isabelline Wheatear (*O.isabellina*).

Very common on every stretch of sand-dunes on the coast and inland. Seen from late October up till the end of March.

44. *Pied Wheatear (O.l.leucomela)*.

First noted on November 6 and last bird seen on March 25. In Mogadishu this species seemed to become almost completely urbanised, being far more often seen right inside the town than just outside it. Owing to these specialised surroundings, was constantly observed using telegraph wires, high walls and other un-wheatear-like vantage points. Out of some two dozen recorded appearances, only three were females.

45. *Desert Wheatear (O.deserti—race unknown)*

What appeared to be the same male seen about a dozen times, always in the same area between early December and mid-February (last seen February 19). The large amount of jet-black on the fore parts made this bird very conspicuous amongst the numerous Isabelline Wheat-ears. Invariably seen on the maritime sand-dunes. I believed that I saw a female on January 27; but it was a most doubtful identification.

46. *Fiscal Shrike (Probably the Teita Fiscal L.dorsalis)*.

Seen nearly every day in urban surrounding, perching on telegraph wires, buildings, etc. in and around Mogadishu. A very obvious nest on the rafters of a verandah surrounding an occupied guard room was half-built on January 27.

47. *Dwarf Raven (C.corax edithae)*.

A pair seen regularly near the shore from the end of January onwards. On March 14 they were carrying small sticks to a nesting site on an overhung ledge on the coral cliffs, about forty feet above the beach. On March 17 both birds were carrying small six-inch twigs for the inner frame-work: on March 18 long grasses were being conveyed. By March 21 a sheep's wool lining had been added: but the cup of the nest had not been fashioned to shape. On March 25 the female(?) was seen moulding the inside to a cup. On the last visit on March 30 tragedy had occurred and the nest was turned inside-out and pendulous, with the remains of two or three broken eggs on the beach below. Agency unknown.

48. *Pied Crow (C.albus)*.

Seen almost daily near the town rubbish dumps in the sand hills and around military camps, etc. They swept low over the dunes in true crow-fashion, and would attempt to drive off the European Kestrel if the latter bird came too near.

N.B.—A few species, such as swallows, found entirely in the town, have been omitted. This includes finches, which were glimpsed only, and ox-peckers.

APPENDIX.

Plumage state of Bar-tailed Godwits shot on October 27.

The feathers of the crown, dark brown edged with grey: lores, whitish grey. A narrow and ill-pronounced white stripe above the eye. Sides of face and the upper neck, grey with narrow medium-brown shafts: neck, greyish-brown. Mantle, back and scapulars, medium-brown with narrow darker brown shaft-stripes, and light buffy spots on both edges

of the feathers. Rump, white, a few feathers having sub-terminal "spear-head" sepia markings: upper tail-coverts white, with large sepia spots. Tail evenly barred white and sepia, about eight sepia bands. Primaries with outer webs black, inner ones medium-brown. The lower half of these inner webs were white, irregularly freckled with light grey-brown. Quills, white. Secondaries greyish-brown, edged and tipped with white: tertaries, as for back. Lesser and median wing-coverts, light brownish-grey, with darker shaft-stripes and irregular whitish edgings. Primary coverts, dull black, inner ones tipped with white. Axillaries, white barred with sepia. Chin, white. Chest, light grey-brown, other underparts whitish, faintly washed with dirty brown. Under tail coverts, white barred with sepia. Sides, as for chest. Bill, slightly recurved, had the terminal two-thirds pale rosy-pink (fading duller after death), outer third black. Iris, black. Legs and feet, very dark greenish-black. Length about $17\frac{1}{2}$ inches: Length of bill, 5 inches. The smaller bird, presumably a first year juvenile, was largely similar; but the axillaries were pure white and the back a darker grey and less grey-brown. Length 15 inches: length of bill 4 inches.

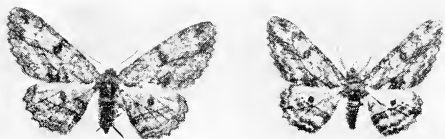
THE LAMMERGEIER IN EASTERN AFRICA.

By Raymond Hook.

Not the least interesting of East African birds is the Lammergeier or Bearded Vulture, *Gypaetus barbatus*. Its original distribution in the old world covered all the great mountain chains, from the Spanish Sierras, the Pyrenees, Alps, Carpathians, Caucasus to the Himalayas and associated ranges; and from Abyssinia along the back-bone of Africa to the Drakenbergs. From this area, it has been exterminated in the Alps and probably in the Drakenbergs.

One of the largest of carnivorous birds, it has a wing spread of nine feet, and is of a dull blackish-brown above, and a buffish salmon below, and has a "beard" of stiff feathers beneath its beak. It is one of the few birds which show the "whites" of its eyes, in this case a brilliant crimson. It is an extraordinarily powerful and graceful flier, more or less the equal of the peregrine, which it much resembles on the wing, in spite of the great difference in size, though it has not the peregrine's mastery of extreme speed. Its long and diamond shaped tail distinguishes it from all similar birds, with the exception of the Egyptian vulture, which is much smaller and differently coloured. The first plumage, in which it leaves the nest, is a dull black all over. It is not known how long it takes to attain the adult plumage.

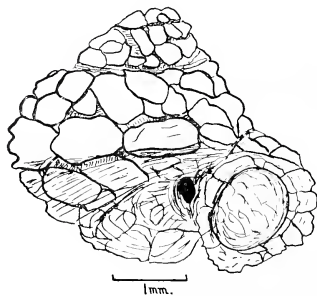
Their food appears to consist mainly of bones, judging by the dung which may be seen in the nest and its neighbourhood, which resembles that of a hyaena. It breaks them into sizeable pieces by dropping them from a height on to a flat rock, hence its old name, used in the Bible, of ossifrage. It is said to have killed a Greek philosopher by dropping a tortoise on him in this manner. The tongue is specialized and long, and is believed to be used to lick out marrow bones and possibly brains, a source of good food which is usually neglected by other scavengers. They appear to be able to utilize a carcass which has already been dealt with by vultures, to be "the last at the feast" like the hyaena. But in Abyssinia and the Himalayas they are known to gather round slaughter houses for any refuse which may be thrown out.



Paracotis hyrax. Natural size.



Eupithecia psiadiata. Slightly enlarged.



The Aryan Indians had a superstition that anyone on whom the Lammergeier's shadow fell would become a king, and certain obscure references to eagles and kings in the Iliad have been thought to mean that this idea was a part of the original Aryan heritage. The third of the Great Moguls of India, Himiayun, had a name compounded of "Himia", the Lammergeier, and the meaning of the name is "fortunate", "august".

In East Africa Lammergeiers are numerous in certain parts of the Abyssinian highlands. In Kenya, they have been reported from near Lake Rudolf, and are probably present on Mounts Nyiro and Kulal, and possibly in the Mathew's chain. They are frequently to be seen on Mount Kenya, less often on the Aberdares. An egg, now in the Coryndon Museum, was taken near Nanyuki some years ago; but it is not known if the birds are still breeding in that vicinity. The number of people who can identify the Lammergeier is singularly limited and no one of them has visited the site recently. A pair is resident southward from Lake Naivasha, and it is perhaps these birds which have occasionally been seen in Nairobi; but other birds are reported from the Chyulu Hills and that neighbourhood. They appear to exist in fair numbers on Mounts Kilimanjaro and Meru, and in the "Winter Hochland", northward from Ngorogoro Crater.

It appears to be a perfectly harmless bird, and exists in such inaccessible places that it seldom comes in contact with man. The only danger to it appears to be poison, to which it is very susceptible, as poison remains inactive for a long time in any carcase, including the bones. Large portions of the areas inhabited by Lammergeiers are now National Parks, and it is to be hoped that the bird will there long continue to enjoy a peaceful existence.

THE OCCURRENCE OF A SPECIES OF CADDIS FLY,
HELICOPSYCHE BREMI (TRICHOPTERA SERICOSTOMATIDAE),
IN TROPICAL AFRICA.

By Bernard Verdcourt.

The genus *Helicopsyche*, first described by Breml in 1848, is known from Southern Europe, Asia, Australia, New Zealand, and North and South America; but in spite of this wide distribution, it does not appear to have been recorded from Africa. The genus is a remarkable one for the fact that the larvae build cases which bear an astoundingly close resemblance to gastropod shells. These cases even have crevices which correspond to the umbilicus of a snail's shell. So close indeed is the similarity, that some of the cases were originally described as molluscs.

The species under consideration, which was very kindly identified as *Helicopsyche* sp. by Mr. D. E. Kimmins, of the British Museum (Natural History), was discovered in small numbers on the undersides of partially submerged rocks by the writer on the 25th of June, 1950, whilst searching for fresh water snails. The locality is the swift Kwamkuyu River, just above the point where it joins the River Ngurue and the River Sigi, close to Sigi at the foot of the Eastern Usambaras, Tanganyika Territory (1,500 ft.). The initial finding of these small creatures caused some excitement since at a preliminary glance they closely resembled species of *Valvata* Mull., a genus of snails which has only been reported from Lake Chad, Somaliland, and Abyssinia so far as the Ethiopian region of the African continent is concerned. An examination

under a lens, however, showed that the shells were made of small grains of sand cemented together, and that the contained animals were arthropods. The shells were firmly attached to the rocks and occurred together with the snail *Cleopatra ferruginea* Lea, which is the only species the writer has been able to find in the streams of the Amani district. A figure is given of one of the largest specimens. Material has been retained by the British Museum (Natural History), and the rest will be deposited in the Coryndon Museum.

N.B.—Since writing the above a reference has been found to the occurrence of a species of *Helicopsyche* in the River Qué, West Lendu. E.v.Martens (1898, *Deutsch-Ost-Afrika*, Band IV, abt. 1 "Beschalte Weichthiere", page 173) mentions Stuhlmann finding them there on the 22nd of September, 1891, and that the cases were 4 mm. broad and 2 mm. high.

West Lendu presumably refers to the Belgian Congo just West of Albert Nyanza.

FOUR NEW KENYA MOTHS.

By A. L. H. Townsend.

1.

HEMITHEINAE.

PRASINOCYMA NEREIS. sp. nov.

♂ Frons, in a living specimen, bright crimson, with wide white lower edge. (This crimson colour becomes quickly dulled after death). Some white scales between bases of antennae. Palpi above slightly browner red than frons, white below. Forelegs brownish red in front, the hairs on tibial process yellowish. Second pair of legs paler: third pair white, with a short white hair-brush. Shaft of antennae whitish above, extreme tip pinkish, pectinations yellowish buff. Thorax and abdomen above concolorous with wings, white below.

Wings pale, slightly bluish green; very thinly scaled. Costa of forewing narrowly edged with yellowish-buff. All wings closely strigulated with silvery-white; strigulae larger and more definite between anal vein and inner margin of forewing, but forming no definite marginal spot. A small and inconspicuous cell-spot of green scales in the forewing, and a similar spot — not always present — in hindwing. Inner half of cilia concolorous with wings; tips silvery-white.

Underside silvery-white; a slightly greener tinge along costa of forewing, below the buff edging.

+ Similar.

Length of forewing, both sexes, from base to apex, from 16 to 18 mm. Holotype ♂ and allotype ♀ in my collection: paratype ♂ in British Museum.

Locality: Nakuru, Kenya. Larva on *Acacia* spp.

2.

PRASINOCYMA ANADYOMENE sp. nov.

♂ Frons bright, almost emerald green; a narrow white line at vertex. Palpi cinnamon red above, white below. Forelegs deep cinnamon red in front; second and third pairs paler. Hind tibia with a long brush of white hairs. Base and shaft of antennae pure white for basal half, then pinkish. Pectinations bright maize-yellow.

Wings rather glaucous green, thinly scaled, with a heavy dusting of brighter green around margins, especially between costa and subcosta of forewing. Costa of forewing very narrowly edged with maize-yellow. Rather sparse silvery-white strigulations all over, and a definite silvery-white spot just beyond the middle of inner margin of forewing. A small cell-spot on all wings; black with a few greyish scales. Cilia green at base, with silvery-white tips.

Underside very pale greenish-white, except along costa, where rather heavily scaled with green as on upper side.

Thorax and abdomen above the same green as the margins of the wings, with white anal tuft; below, white.

♂ Similar, but larger; edging of costa is paler.

Length of forewing from base to apex: in ♂, 18 to 19 mm.;

in ♀, 19 to 21 mm. Holotype ♂ & allotype ♀ in my collection:

paratype ♂ in British Museum.

Locality: Nakuru, Kenya. Larva on *Olea chrysophylla*.

3.

LARENTIINAE.

EUPITHECIA PSIADIATA sp. nov.

Frons, vertex, palpi and bases of antennae whitish, heavily speckled with dark brown. Legs fuscous-brown in front, with white scaling at joints. Abdomen above concolorous with fore-wings; thorax paler. A narrow whitish transverse line on the first abdominal segment; a pale dorsal line along abdomen, with six small dark crests. Terminal segment paler; in ♀ almost white.

Forewing very variable in colour, from the reddish-brown of the type to almost olive green. Fuscous maculae on costa, with whitish patches beyond them, indicate the beginnings of transverse lines. Reniform conspicuous black, very long and narrow. Basal line black, edged with whitish outside, from costa to median only. Antemedial and medial indicated only by costal maculae, and dark spots on medial and anal veins. Post-medial consists of a series of dark spots on veins, with faint whitish scaling beyond them. Sub-terminal line of whitish spots in upper half of wings, rather remote from apex, then coming closer to margin from R5 to C1, ending in a conspicuous white spot near tornus, between cubital and anal veins. Terminal line straight, continuous, fuscous-brown. Cilia whitish, chequered with dark brown at veins. The inner-marginal fringe consists of long, black, plume-tipped hairs, mixed with paler hairs.

Hindwing greyish, thinly irrorated with dark brown, with a very indistinct border of reddish-brown beyond postmedial. Reniform smaller, less elongated, and less distinct than in forewing. Sub-terminal line visible as a few whitish spots, the most conspicuous being near anal angle. Postmedial can be faintly traced as dark spots on veins. Between inner margin and plical fold are three patches of dark brown scales, with white patches between them, that nearest to anal angle very conspicuous.

Underside, hair-brown, rather shiny. All reniforms distinct;

costal maculae less so. The transverse lines — except basal — more easily seen than on upperside.

Length of forewing, base to apex: 9 mm.

This species comes very close to *somerani*, Prout; but besides slight differences in markings, it differs in the following points:—

The 7th sternite in the ♂ has a narrow but deep indentation between twin lobes. In *somerani* this indentation is shallow but broad, and the lobes are replaced by two unequal projections. In *psiadiata* the posterior edge of the genital plate is concave; in *somerani* it is convex.

Holotype ♂ and allotype ♀ in my collection: paratypes ♂ and ♀ in the British Museum.

Locality: Nakuru, Kenya. Larva on *Psiadia arabica*.

4.

BOARMIINAE.

PARACOTIS HYRAX sp. nov.

♂→ Frons dark brown, with whitish lower edge. Antennae pectinated for three quarters of their length, shaft and pectinations creamy-white, speckled with dark brown. Thorax above concolorous with wings; abdomen slightly darker, with a pale transverse band behind each segment. Ground colour of wings creamy-white, but much irrorated and strigulated with sepia, fuscous, and hair-brown.

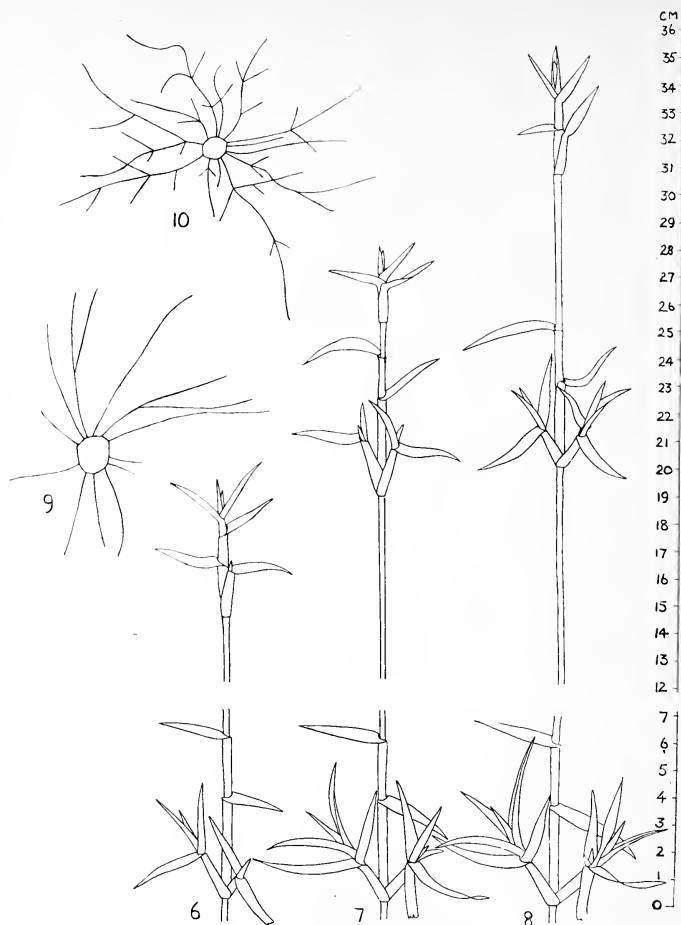
Forewing: Antemedial, originating in a fuscous costal macula, is a narrow fuscous line, faint in upper half, very distinct in lower. Nearly straight from costa to lower median, incurved to just above anal vein, thence very oblique to near base. Preceded by a cloudy brown fascia. Medial very indistinct, fuscous, touching reniform, coming very close to antemedial above anal vein, then turning almost perpendicular to inner margin. Post-medial narrow, fuscous, very conspicuous. Incurved from costa to upper median, then very oblique to above anal vein, then almost perpendicular to inner margin. (These three lines come very close together — actually touching in some specimens — above anal vein about half-way along the wing. From this point the antemedial carries on the same slope as postmedial; so that in a well-marked specimen, such as the type, it looks like a continuation of it). Beyond postmedial to termen, a cloudy area of sepia and hair-brown, containing first an indeterminate fascia, and then a zigzag subterminal line, both of ground colour. A darker oblique shading crosses these from lower median to below apex. Terminal line black, slightly crenulate, strongly defined. All veins beyond postmedial (and median in most cases for its whole length) heavily scaled with black. Reniform long, black, white-centred. Cilia ground colour at base and tips, with a dark line at centre, darker sections at veins.

Hindwing similar, but only postmedial and terminal lines distinct. In a few cases the cloudy fascia before antemedial is present. Reniform less elongated than in forewing.



Figs. 1—2, Structure of *Digitaria* (1) and *Cynodon* (2) stolons. Diagrammatical.

Figs. 3—5. A stolon of *Digitaria* aff. *milanjana*. 3—14.11.1950
4—16.11.1950; 5—18.11.1950. (Grass nursery, Scott
Laboratories, Nairobi).



Figs. 6—8. A stolon of *Cynodon plectostachyum*. 6—14.11.1950; 7—16.1.1950; 8—18.11.1950. (Grass nursery, Scott Agric. Laboratories, Nairobi).

Figs. 9—10. Nets of stolons of *Digitaria aff. milanjana* (9) and *Cynodon dactylon* (10). (Grass nursery, Scott Agric. Laboratories, Nairobi, 1949).

Underside creamy-white; costa of forewing irregularly strigulated with fuscous brown. Large subcircular reniforms in all wings. A brown macula below apex surrounds a small area of ground colour. Postmedial indicated by dark spots on veins. Terminal line very distinct.

♂ Similar, but greyer; marking less distinct.

Genitalia of ♂. Similar in general build to *sabinei*, Prout; but differing in the following points:—

Gnathos of even width, not broadened towards the end. Costa of valve with only one patch of spines, and that at the middle. Anterior end of costal margin produced to a rounded lobe, not to a narrow point. The two cornuti are made up of spine-clusters, as in *sabinei*, but of only half their length. The loose dorsal belt of spines, connecting the cornuti in *sabinei*, is absent in *hyrax*.

Length of forewing, base to apex: ♂ 21 mm.; ♀ 23 mm.

Holotype ♂ and allotype ♀ in my collection: paratype ♂ in the British Museum.

Locality: Nakuru, Kenya. Larva on *Schinus molle*.

I wish to acknowledge gratefully the help that I have received with regard to these species from Mr. D. S. Fletcher, of the British Museum. The notes on genitalia are taken entirely from information supplied by him.

Paracotis *hyrax*. Natural size.
Eupithecia *psiadiata*. Slightly enlarged.

OBSERVATIONS ON STOLONIFEROUS GRASSES IN KENYA.

By A. V. Bogdan, F.I.S.
Department of Agriculture, Kenya Colony.

In Europe and probably also in other temperate regions, stoloniferous grasses, i.e. grasses which produce above-ground creeping stems, rooting from nodes, are rare. In Tropical Africa the stoloniferous type of grass is, however, fairly common. In Kenya, out of approximate total of 430 species of grasses, no less than 25 of them produce stolons. The stolons of different species vary considerably in structure, shape and length, rate of growth etc., and it is mainly the structure, i.e. the distribution of leaves on the axis of stolons and phenomena connected with this feature, which are dealt with in the present paper.

The stolons of all local stoloniferous grasses can be classified into two well-defined types, examples of which are those of (a) *Digitaria* aff. *D. milanjana* Stapf (Bogdan 3003) and (b) *Cynodon plectostachyum* Pilger. The stolons of the *Digitaria* have a structure typical of a normal grass stem: the nodes are more or less evenly distributed on the stem, each bearing a single leaf. The leaf bases, or, to be more exact, the bases of the leaf sheaths, arise at some distance one from another and have well

defined internodes between them. The structure of the stolons of *Cynodon* is different. The leaves are in groups of 2 to 6 (but usually 4) and the leaf bases of each group appear to arise from a single node. These nodes can be regarded, however, as compound nodes or as groups of nodes with very short, undeveloped internodes between them. This supports the view held by A. Volkart and O. Kirchner in "*Lebensgeschichte der Blütenpflanzen Mitteleuropas, Gramineae*, 1,2,p.35 (1908-1912) who state: "bei einigen Gräsern (*Cynodon*, *Aeluropus*) wechseln an den oberirdischen Ausläufern regelmässig ein gestrecktes Internodium mit 2-4 verkürzten ab, sodass die Blätter stellenweise gebüschelt erscheinen". The writer is unaware of any further reference in the literature to details of the structure of grass stolons.

The structure of the two types of stolons considered here, which will be referred to in future as "A" (*Digitaria*) type and "B" (*Cynodon*) type, is shown diagrammatically in Figs. 1 and 2.

The difference in distribution of leaves on the two types of stolons is closely connected with character of the branching. Before branching starts the axillary buds which produce side branches are hidden under the basal parts of the leaf sheaths. As soon as a young branch starts growing from the bud it usually depresses the leaf sheath from the stem. In the "A" type of stolons (*Digitaria*), with only one leaf per isolated node, the depression of the leaf sheath leaves the corresponding internode unprotected, the basal part of the internode becomes hard and ceases to grow. Towards the apex of a stolon there are always several internodes growing simultaneously; the branching, therefore, begins at some distance — which may at times be considerable — from the apex of the stolon where the appropriate internodes have ceased to grow. It also naturally follows that, since only one leaf arises from an isolated node, this type of stolon produces only one branch (or none at all) from a node, except at an advanced stage of branching when a side branch may produce branches in its turn.

On the whole the characteristic features of the "A" (*Digitaria*) type stolons can be summarised as follows:—

- a) The stolons have structure typical of a normal grass stem, with isolated single nodes each producing one leaf.
- b) The stolons produce only one branch per node (or none at all).
- c) An internode ceases to grow as soon as the branching from the corresponding node begins.
- d) The branching begins at some distance from the apex of a stolon.

A different process of branching has been observed in the "B" (*Cynodon*) type of stolons. It has already been mentioned that the stolons of this type have compound nodes each bearing 2—6 leaves. The branching begins from the axil of the lowest leaf. The young branch depresses the leaf sheath from the stem, but the latter is still protected by the sheaths of the upper leaves of the same compound node. The second branch starts from the axil of the next leaf, etc. until only two (or sometimes one) upper sheaths remain adpressed to the stem. If, for example, four leaves arise from the same compound node, two of them produce branches from axils and two upper sheaths remain adpressed, protecting the corresponding internode. The basal part of the

internode remains soft and proceeds to grow for up to several days after the beginning of the branching. Thus the branching in "B" type stolons does not depend on the longitudinal growth of internodes, and one can expect branching to begin at any time after the appropriate node has been fully formed. In actual fact, in *Cynodon plectostachyum*, as well as in many other species with "B" type stolons, branching begins at an early stage of development of the upper internodes, and therefore, in the growing part of the stolon, very near to the apex.

The characteristic features of the "B" (*Cynodon*) type stolons may now be briefly summarised as follows:—

- a) The stolons have a structure atypical of a normal grass stem, in that they have compound nodes each producing 2—6 leaves.
- b) The stolons produce in general more than one branch from a compound node.
- c) An internode proceeds to grow after branching from the corresponding internode has taken place.
- d) Branching usually begins close to the apex of the stolon.

The actual growth of the stolons of *Digitaria* aff. *milanjana* and *Cynodon plectostachyum* as observed in the grass nursery at the Scott Agricultural Laboratories, Nairobi, is shown in Figs. 3—8.

The difference in structure and branching of the two types of stolons described results in somewhat different pattern for the whole system of stolons which arises from a single plant. It has already been noted that in the "A" type of stolons each node produces only one branch (if any). This, as a rule, becomes a vertical sterile or fertile shoot, and only seldom does it become a side stolon. Thus the whole system of stolons of *Digitaria* or of other genera producing "A" type stolons is rather simple, and consists usually of scarcely branched stolons (Fig.9), each producing a row of vertical shoots. In the "B" type each node of a stolon usually produces 2-4 branches of which one or two may often become side stolons. Thus the whole system of stolons of *Cynodon* and other grasses with "B" type stolons is as a rule more complicated, and it consists of a net of more or less much branched stolons (Fig.10).

The stolon type of a grass species is connected with its taxonomical position in the *Gramineae* and species which belong to the same tribe usually produce the same type of stolons. The following list shows the occurrence of the two types of stolons in the different tribes of Kenya grasses.

I. SPECIES WITH "A" (*DIGITARIA*) TYPE STOLONS.

PANICEAE.

1. *Digitaria* aff. *milanjana* Stapf. (Bogdan 3003)*
2. *Digitaria?* *macroblephara* Stapf (Bogdan 873 and 2257)
3. *Digitaria mombasana* Hubbard
4. *Digitaria scalarum* Chiov. (normally a rhizomatous grass which only occasionally produces stolons)
5. *Pennisetum clandestinum* Hochst. (produces both stolons and rhizomes)
6. *Brachiaria humidicola* Schweickhardt

ANDROPOGONEAE.

7. *Bothriochloa insculpta* A. Camus

SPOROBOLAEAE.

8. *Sporobolus helvolus* Dur. & Schinz

II. SPECIES WITH "B" (CYNODON) TYPE STOLONS.

ERAGROSTEAE.

9. *Diplachne caudata* K. Schum.
10. *Diplachne jaegeri* Pilger.
11. *Dactyloctenium geminatum* Hack.
12. *Dactyloctenium scindicum* Boiss.
13. *Dactyloctenium* sp. (Bogdan 866 and 3155)

CHLORIDEAE.

14. *Eustachys paspaloides* Lanza & Mattei
15. *Chloris amethystea* Hochst.
16. *Chloris* aff. *amethystea* Hochst. (Bogdan 1590)*.
17. *Chloris gayana* Kunth
18. *Chrysoclora orientalis* Swallen
19. *Cynodon dactylon* Pers.
20. *Cynodon plectostachyum* Pilger.

SPOROBOLAEAE.

21. *Sporobolus marginatus* Hochst.
22. *Sporobolus spicatus* Kunth
23. *Sporobolus virginicus* Kunth

LEPTUREAE.

24. *Lepturus radicans* A. Camus
25. *Lepturus repens* R.Br.

AVENEAE.

26. *Lintonia nutans* Stapf.

The above list shows that all Kenya stoloniferous species of the *Panicaceae* have "A" type stolons.*) On the other hand all stoloniferous species of the *Chlorideae*, *Sporoboleae*, *Leptureae*, and *Eragrosteae* produce "B" type stolons. In the last group of tribes with the "B" type stolons the *Chlorideae* occupy somewhat central position and have numerous stoloniferous forms. The other tribes and genera of this group are more or less closely related to the *Chlorideae*, with the exception,

*) I have recently come across fresh stolons of *Stenotaphrum dimidiatum* (*Panicaceae*) which proved to be essentially of the "B" type!

* Refers to the specimens deposited in the Herbarium of the Royal Botanic Gardens, Kew, England.

of the *Aveneae*, which in Kenya have only one stoloniferous species, namely *Lintonia nutans*. This species in its habit, distribution and ecology approaches, however, more the *Chlorideae* than the rest of the *Aveneae*, and its taxonomic position requires a revision. In the group of tribes characterised by the "B" type stolons, *Sporobolus helvolus* with its "A" type stolons is an exception. The stolons of *Sporobolus helvolus* are not, however, comparable morphologically with those of *Sporobolus marginatus* or *Sporobolus spicatus*. In these two latter species the stolons arise as specialised structures, and grow horizontally from the moment of their formation, while in *Sporobolus helvolus* the young stolons appear as ordinary stems. Initially they grow vertically, and only later on do they bend downwards, acquiring a creeping habit and rooting from nodes. The writer is inclined to believe that the stolons of *Sporobolus helvolus* can be regarded as a structure morphologically independent from the true stolons of other species of *Sporobolus*, a structure which was probably formed at a later date in the evolution of the genus. *Sporobolus virginicus*, although it produces rhizomes and not the above-ground stolons, is also included. Its rhizomes have a structure typical of the "B" type stolons in producing several (usually 3) leaves from a node. Naturally these leaves are in the form of scales, as it is typical of the rhizomes. The rhizomes of *Sporobolus virginicus* produce, however, only one branch from a node which arises from the axil of the lowermost scale as an extravaginal shoot. The branches form vertical, leaf-bearing shoots, while the rhizome itself does not branch. The rhizomes of *Sporobolus virginicus* can be regarded as modified "B" type stolons with its typical structure, which apparently lost its adaptative character.

Although in the *Paniceae* the forms with true stolons are not numerous, many species which produce creeping stems rooting from nodes are encountered in the tribe. These creeping stems terminate, however, in flowering heads, and they cannot be regarded as stolons. They are more comparable with ascending or creeping stem bases which also frequently root from the nodes. In fact, numerous transitional forms between long creeping stems and those with only slightly ascending bases are found. The creeping or trailing grasses of the *Paniceae* are particularly numerous in forests and in bush thickets, and to some extent also on swampy ground. Several species of *Panicum*, *Pseudechinolaena polystachya* Stapf, *Sacciolepis curvata* Chase, *Chloachne oplismenoides* Stapf, species of *Oplismenus* and many others belong to the forest creeping grasses. On swampy ground the grasses with creeping stems are represented by *Paspalidium geminatum* Stapf, *Panicum repens* L., *Acroceras macrum* Stapf, *Pennisetum dowsonii* Stapf & Hubbard, *Pennisetum salifex* Stapf & Hubbard, and by several others. Even on dry open ground there are several species of the *Paniceae* with long creeping basal parts of the stems. These include mainly species of *Urochloa*, *Melinis*, and a few others. In the *Andropogoneae* trailing forms are much less numerous although some species of *Andropogon* and *Hyparrhenia* and *Eulalia geniculata* Stapf produce fairly long creeping stem bases.

In the *Chlorideae* group of tribes the number of species producing specialised stolons is comparatively large, much larger than that in the *Paniceae* and *Andropogoneae*. On the other hand, the number of species which produce partly or entirely creeping shoots of the structure normal in a typical grass-shoot, is surprisingly small. Apart from already mentioned *Sporobolus helvolus*, only a few species of this kind are known

to the author, namely two or three species of *Eragrostis* and *Drake-Brockmania somalensis* Stapf, an annual with prostrate stems. Even forms with ascending and rooting stem bases are rare in this group of tribes. In general the *Chlorideae* group of tribes is characterised by highly specialised stolons which differ considerably from the normal fertile shoots of grasses. Even some annual species with creeping stem bases (*Chloris pycnothrix* Trin., *Dactyloctenium aegyptium* Beauv.) repeat, in their basal, spreading parts of the stem, the structure typical of the "B" type (*Cynodon*) stolons, by producing several leaves from each compound node.

The length and rate of growth of stolons vary considerably in different species. In the *Chlorideae* and in the allied tribes, two types of stoloniferous grasses, characterised by the rate of growth of the stolons, have been observed. To one type belong species with rapidly growing stolons which form extensive, though rather thin, nets and in a comparatively short time produce large, open colonies. Being open, these colonies allow the growth of other plants in the areas occupied by the colonies. The actual competition between the species starts only later, when, after having covered a considerable area with a thin net of stolons, the stoloniferous grass begins to form a dense sward. As examples of this type of stoloniferous grass, *Cynodon dactylon*, *Cynodon plectostachyum*, *Diplachne jaegeri*, and *Chloris gayana* can be named. The second type is characterised by the comparatively slow growth of stolons. Species which belong to this type produce slowly spreading, but dense, nets of stolons, and form dense colonies from the very beginning of their growth. Grasses of this group occupy an area slowly, step by step, but once in occupation they retain it firmly. Amongst the grasses of this type are *Chloris amethystea*, *Eustachys paspaloides*, and *Sporobolus marginatus*.

ACKNOWLEDGEMENT.

The author is much indebted to Mr. C. E. Hubbard, Principal Research Officer, Royal Botanic Gardens, Kew, for very valuable advice on taxonomy of the grasses dealt with in the present paper. Nairobi, November, 1951.

A LITTLE-KNOWN WATERLILY FROM TANGANYIKA.

By P. R. O. Bally.

Botanist, Coryndon Museum.

In Unyamwesi and Ussukuma, in Western Tanganyika, grows one of the loveliest and least known of all waterlilies: *Nymphaea stuhlmanni* (Schwft.) Gilg.

At the end of August, 1942, the writer had the good fortune to see it for the first time, from a railway carriage, travelling from Tabora towards Dar-es-Salaam. Immediately beside the railway track was a little pond, covered with large, bright yellow waterlilies. The temptation to pull the safety cord was strong; but a sense of propriety prevailed, and a unique opportunity was missed.

Ten years later, almost to the day, on August the 24th, 1952, the occasion arose to visit the area again. My enquiries revealed that the very pond that I had passed in the train was situated a few miles from

the place where I was staying. The drought had set in early, and most of the natural ponds had completely dried up. On the caked mud, however, pitted with the footprints of elephants, dried flowers and leaves were still strewn about, and some tubers were lying exposed on the surface. The drying-up of the pond must have taken place quickly, for the leaves had dried green and the petals of the shrivelled flowers were still yellow.

Waterlilies abound in most tropical African stagnant waters, predominantly bearing white, or blue to purple flowers. Some years earlier I had collected several of those species in the extensive swamps of Malagarasi; but I had seen no trace of *Nymphaea stuhlmanni*. Yellow species of *Nymphaea* are few, only two are known from Africa; and their distribution is comparatively limited.

History: *Nymphaea stuhlmanni* was discovered by Dr. F. Stuhlmann in June 1890, at a place described as "gunda mkali" near "Bibisande" in Unyamwesi, at 1200 meters (3800-4000') altitude. These names cannot now be traced on our modern maps of Tanganyika.

In Engler's "Pflanzenwelt Ostafrikas", C., 178, 1895, it is very shortly described as a variety of *Nymphaea lotus* L. (the description gives no structural details, but refers merely to the yellow colour of various parts of the flower).

Eight years later, in an annotation to his description of *Nymphaea sulphurea* (in Warburg's "Kunene-Sambesi Expedition", 236, 1903), E. Gilg published our plant as a separate species, based on distinctive characters such as the entire leaf margin, the long appendages of the anthers, etc. In 1905, H. S. Conard's magnificent monograph "The Waterlilies" gives Engler's short description verbatim; and the plant is figured with a line-drawing made from Stuhlmann's type, in Berlin.

Finally, *Nymphaea stuhlmanni* is described more fully in E. Gilg's chapter on *Nymphaeaceae africanae*, published in "Engl. Bot. Jahrb.", Vol. 41, pp 355-356, 1908. Here the diameter of the flower is given as 10-15 cm.; the prominent veins on the underside of the leaf are mentioned; and the author points out that on Conard's illustration the leaf is inaccurately shown with rounded lobes, while in Stuhlmann's type they are distinctly acute.

The plant was collected again in 1929 by a railway employee of the Tanganyika railways; living specimens were sent to Amani and cultivated at the East African Agricultural Research Institute. They did not survive for more than a few months. Dried flowers (but no leaves) were obtained for the Herbarium.

In 1935, B. D. Burt collected specimens at Shanwa, in Ussukuma. They show well the entire margin and the acute lobes of the leaf.

Habitat: From the few places which I inspected in Unyamwesi, it would appear that *Nymphaea stuhlmanni* is not found in permanent waters, but in seasonal pools, which dry up completely during the very prolonged dry season which prevails in the area. Thus, in a large permanent swamp there was no trace of *N. stuhlmanni*, while *Nymphaea lotus* was present. In the smaller pools, quite dry when visited, numerous remains of *Nymphaea stuhlmanni* were seen. In the dried-up portion of an artificial dam, at its lowest at the time of my visit, many half-buried tubers with dried

leaves and flowers were found in the cracked mud; while in its deepest part, where the water is permanent, there were several plants of *Nymphaea lotus*, but only one living *Nymphaea stuhlmanni* at the very edge of the water, with one flower fully unfolded. These observations point to the possibility that the tuber of *Nymphaea stuhlmanni* needs an annual period of rest in the dessicated mud, and the failure to retain it in cultivation in Amani might be thus explained.

Description: From the two Herbarium sheets in the East African Herbarium in Nairobi (Greenway 1519 from Central Tanganyika, 1929, cult. in Amani, and B. D. Burt 5215, from Shanwa, 1935) and from fresh material collected by the writer, it is now possible to describe *Nymphaea stuhlmanni* with more detail.

Rhizome: Ovoid to spherical, sometimes irregular, erect, with projecting leaf-scars 5—12 cm. long, dark, blackish-brown, densely covered with thin grey mucilaginous hairs; roots white, cylindrical, long slender.

Leaves: about twenty, on long slender, green petioles; blade ovate. 20 cm. long, 18 cm. broad, sinus open, lobes acute, green on both sides, young leaves with small purple spots on the underside; midrib and veins prominent underneath.

Flowers: 10—15 cm. diameter; *Sepals:* four, 7 cm. long, 2 cm. wide, lanceolate with a rounded apex; green outside, sulphur yellow inside. *Petals:* twenty-seven, up to 6.5 cm. long and 13 mm. wide, lanceolate, acute, sulphur yellow; *Anthers:* one hundred and thirty three, arranged in concentric rings, 9 mm to 17 mm. long, with appendages 1—10 mm. long, golden yellow on strap-shaped filaments. *Ovary:* 36 mm. diameter when mature; *Carpels:* twenty three, flat, 16 mm. high, 15 mm. wide, with a yellow beak-like horn incumbent on the dome-shaped golden yellow axile process.

Seeds: very numerous; ovoid, 1 mm. long, $\frac{3}{4}$ mm diameter, straw-coloured, with thin, longitudinal, hairlike lines.

Coryndon Museum,
Nairobi.
September, 1952.

BOOK REVIEW.

SOME GAME BIRDS OF WEST AFRICA. By William Alexander

Fairbairn. D.Sc., Edin.

With 9 colour plates by P. M. Sumner. pp 92 and xii. Edinburgh, Oliver & Boyd Ltd., 12/6 net.

This is a well-produced little volume, whose object is, as the author indicates in his preface, the recording of general information and interesting facts about the migrant and resident game birds of West Africa.

The text consists of brief accounts of 18 Ducks and Geese; 8 Francolins; 5 Bustards; 4 Guinea-fowl; and 12 smaller birds including Stone-partridge, Quail, Snipe, Quail-plover, Button-quail, and Fruit-pigeons. The matters covered for each are geographical distribution, local habitat, field appearance, voice and nesting. No measurements are given, and the pictures serve instead of descriptions, as in Roberts' work on South African birds.

The plates of the Ducks and Geese are the most successful, and should in practice be helpful to sportsman and bird observer alike; but some of the others would hardly suffice for identification in the field. Since more than half of the species dealt with are represented by local races in Eastern Africa, bird-lovers on this side of the continent will doubtless wish to have this book on their shelves, particularly as the general information in each case, whether original or compiled, appears to be a useful summary of present knowledge.

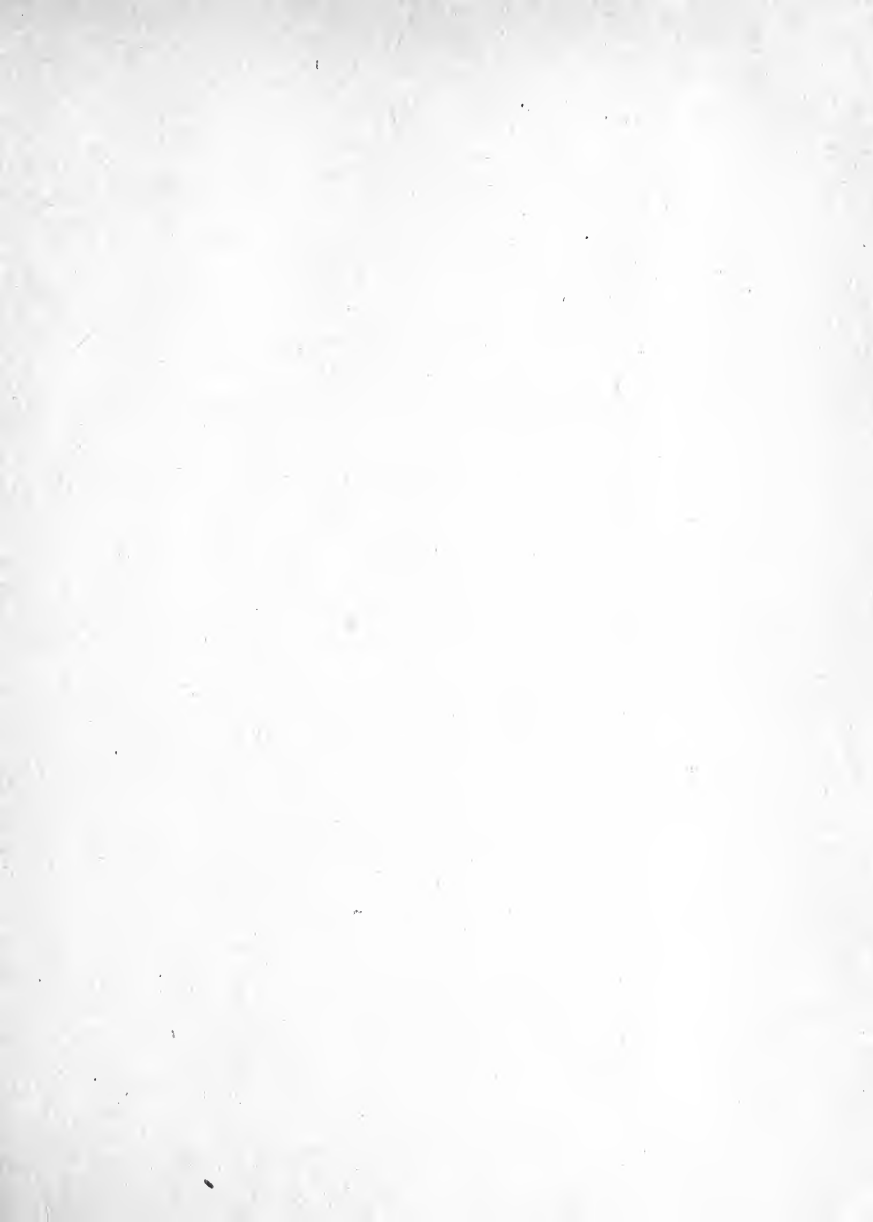
We have a few criticisms to make. Space might well have been saved, and room made for the inclusion of rarer species and their figuring, had the breeding habits of Palaearctic migrants, which could not be of use in the local field, and are accessible in standard works, been omitted; and also if only one form of each species had been dealt with. As it is, we find three separate articles on as many geographical races of the Double-Spurred Francolin, with a coloured plate of each. On the other hand, we are told that the form *adamauae* of this species closely resembles Ogilvie-Grant's Francolin; but there is no further mention of the latter.

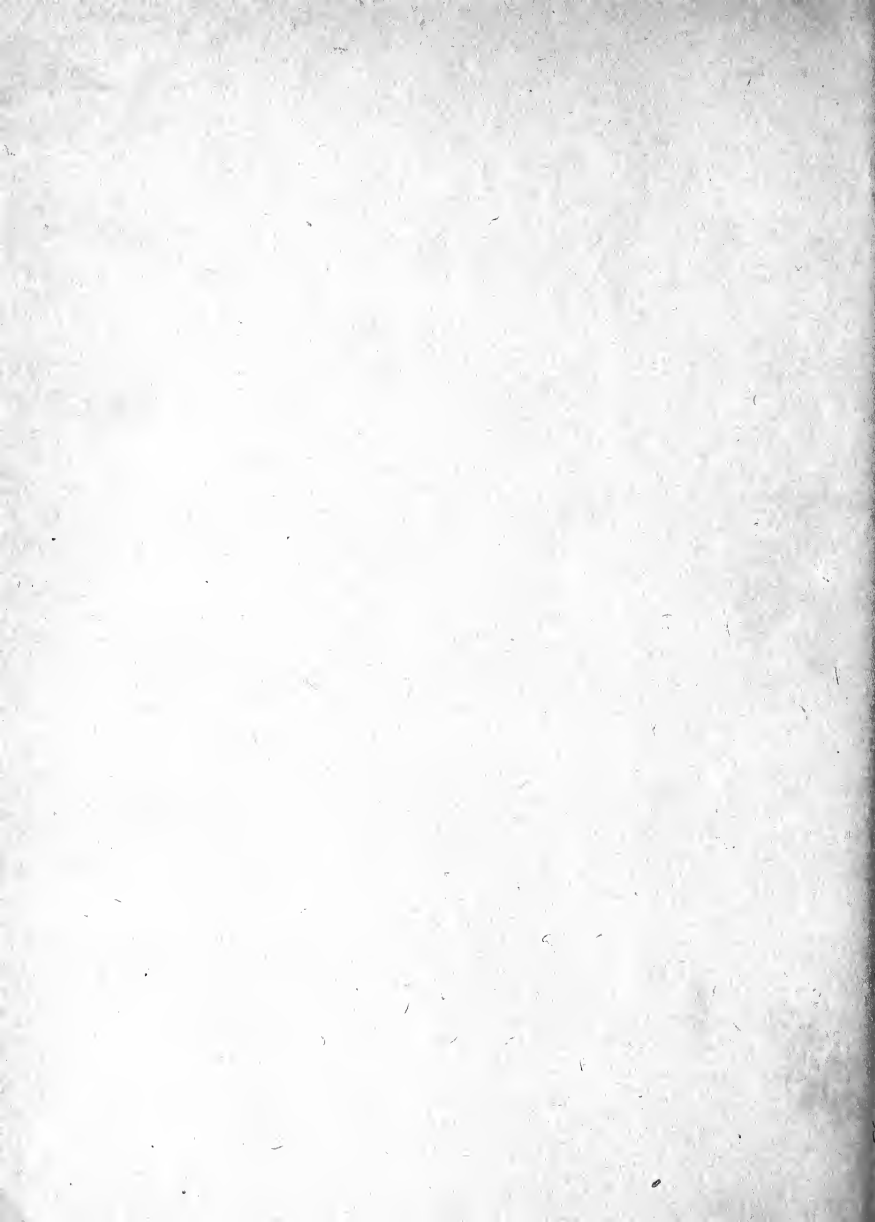
The beginner would have been helped by greater clarity in the use of ornithological terms. It is, for instance, stated that "There is a variety of species of the Stone-Partridge.....the above species however, (*Ptilopachus p. petrosus*) ranges from Senegal.....to Northern Nigeria and the River Shari". One would hardly conclude from this that the fact is there is only one species of Stone-Partridge, with a number of geographical races. Again, the writer says of the Quail-plover "This species can scarcely be called a game bird, but being closely related to the genus *Turnix*, which includes the quails, it is not without interest". The ornithologist can see what is meant; but it would have been better to have expressed it correctly.

Finally, we notice that the distribution of a given species as a whole is not always precisely stated; nor is sufficient use made of knowledge concerning races in other parts of Africa which are represented by conspecific forms in West Africa. Not always indeed, but usually the various races of a widespread species have a strong similarity in habits.

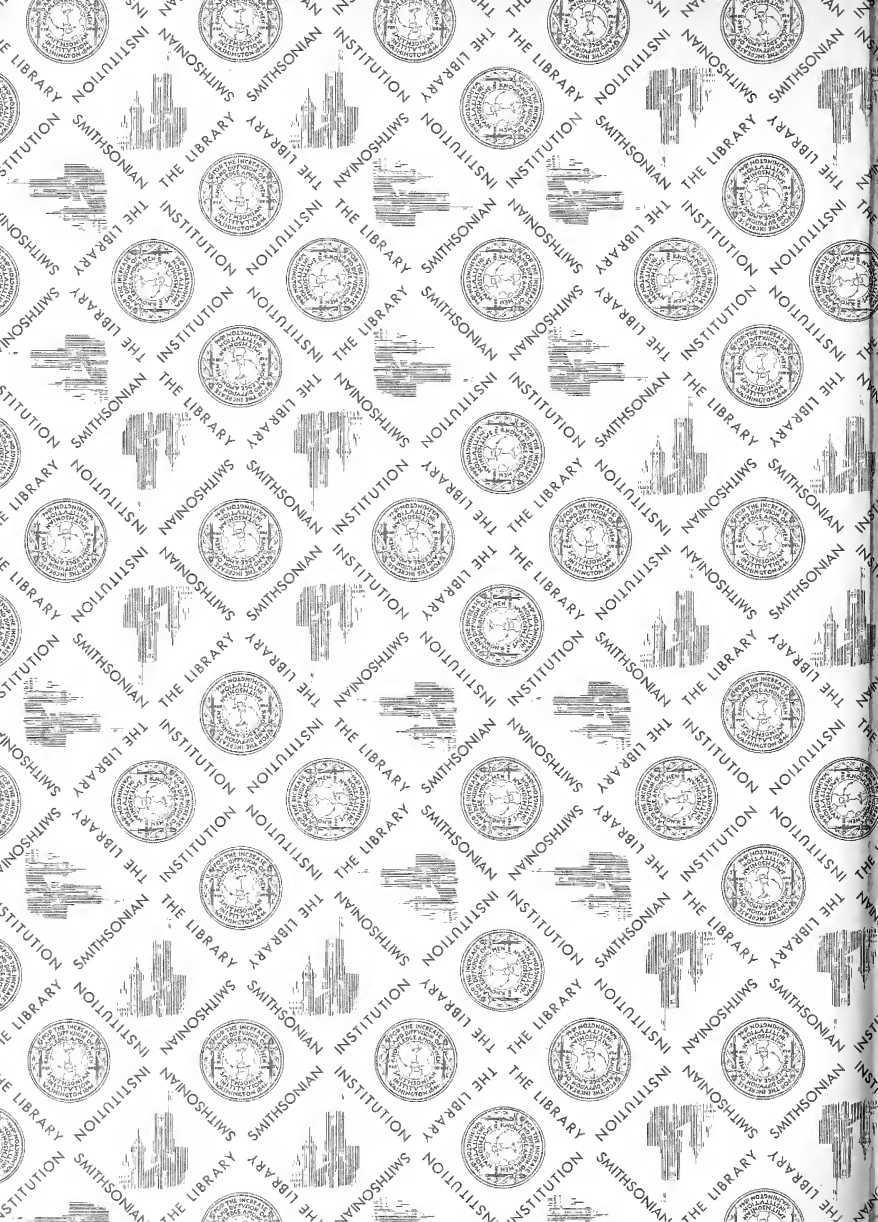
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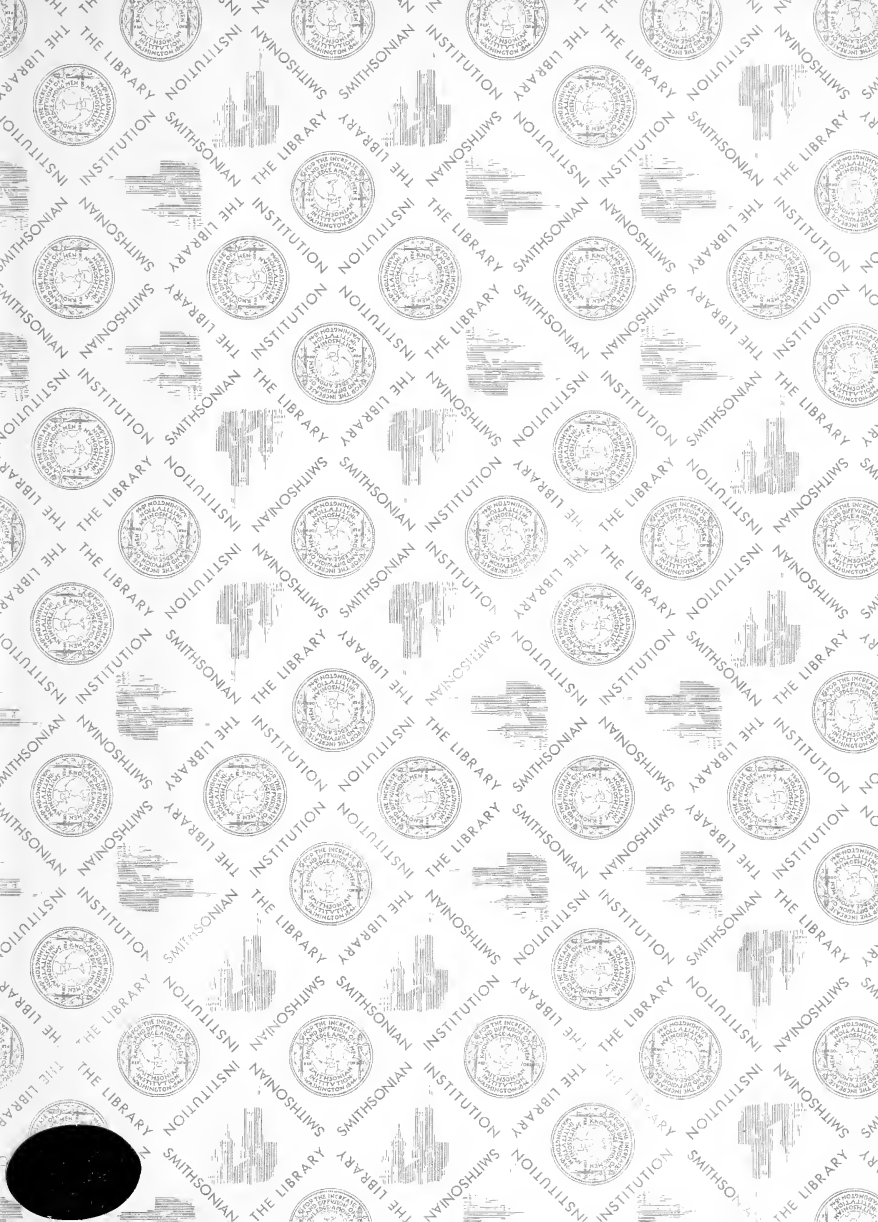
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